

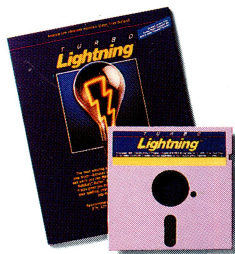
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# Because you need the right word, the right phrase, the right meaning, and the right answer, *right now*, you need Borland's Turbo Lightning

Since you write, think, work, live, breathe, and ask questions, you need the instant electronic support of Turbo Lightning™—the fastest, most amazing information system since your brain.



You need the power of an astonishing program that checks your spelling as you type. The versatility of a program that gives you instant access to the 50,000-word Random House® Thesaurus and the 80,000-word Random House Concise Dictionary. The retentiveness of a program that remembers your name and any other words you teach it. The adaptability of a program that lets you do all of the above—while you run other programs. And of course the growth path of a program that is rapidly developing into a body of full-fledged electronic reference works called the Turbo Lightning Library.™

## Turbo Lightning checks your spelling as you type and while you run other programs

You could be running Lotus 1-2-3,® MultiMate,™ MicroStar,™ Reflex,™ SideKick,® WordStar,® or WhatEver,® it doesn't matter which one, because as you write, Turbo Lightning watches how you spell every word, and is ready to alert you to any mistakes.

So let's say your neighbor, who already has 23 unmatched sets of plastic flamingos on his front lawn, a broken boat trailer, and a mattress, has now brought back a

coyote from a hunting trip. It howls all night, and you're writing a letter involving the word IDIOT, but you accidentally typed IDOTT. What happens then? You immediately hear a beep, so you know something's up. You instantly see a window that doesn't list IDOTT, but it does list IDIOT and its sound-alike words, so your screen window looks like this:

A. IDIOT
B. IDIOTS
C. IDIOM
D. IDIOTIC
E. INDICT
F. IDIOMS
G. ADD WORD TO AUXILIARY DICTIONARY

So you move your cursor to A, which is the correct spelling for IDIOT, hit return, and the spelling mistake is instantly fixed.

## Turbo Lightning also gives you instant synonyms

IDIOT was the word you planned to use in your note next door, but is it the best word? And should you use that particular word since your neighbor fools around with his guns when he's full of whisky (which is every night), and besides that, he's 6'10", a black belt, and your cousin?

Because you have Turbo Lightning's Random House Thesaurus at your fingertips, you can look at the synonyms for IDIOT.

Type in IDIOT and what you see is:

- NOUN -
A. CRETIN
B. MORON
C. HALF-WIT
D. BLOCKHEAD
E. JERK
F. NITWIT
G. FOOL

Any one of which expresses your opinion of your cousin's mental stature. So write the letter, but don't mail it!

## Turbo Lightning won't forget your name

Teach Turbo Lightning your name and it's there—correctly spelled—forever. So are all the other names and words you teach it to help run your business and personal life.

## You can get Turbo Lightning for an incredibly low FF 995

Just FF 995 gets you Turbo Lightning, which is an incredible deal when you look at what you're getting: the access system or engine that powers the first two volumes and future volumes of the Turbo Lightning Library.

And for only FF 1495, you can get both Turbo Lightning and the Lightning Word Wizard, which is so intriguing, you'll probably be up half the night. And if that happens, sneak next door around 4A.M., unchain the coyote, and let it run away!

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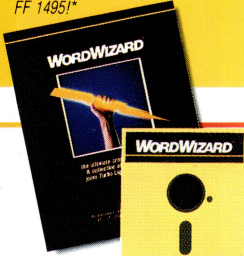
Lightning Word Wizard shows you how to access, hook into, and work with Turbo Lightning's engine. It's the technical reference guide to the Turbo Lightning engine—but a guide which we've lightened up with games.

You get Turbo Pascal® source code with Lightning Word Wizard, and all the technical guidance you'll need to start and run Lightning's engine.

Lightning Word Wizard's games include thousands of ways to jumble, scramble, unscramble, twist, turn, and boggle your mind. It solves what seem to be unsolvable crosswords and

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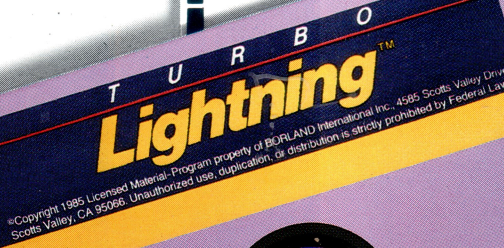
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256K Hard disk recommended. Runs on IBM PC, AT, XT, PCjr,

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**Publisher/Editor-in-chief**  
Jaap van der Meer

**Editor**

Louis Rossetto

**Associate Editor**

Rinze Terluin

**Correspondents**

Maghi King (European Community)

Joe Raban (United States)

**Contributing writers and translators**

Brian Dommis, Jan Freyser, Charles Hugo, Cynthia Jaffe, Geoff Pogson, Peter Rutten, Ed O'Sullivan, Sipke Westveen.

**Art director**

Max Kisman GVA

**Senior DTP Operator**

Bert Hendriks GVA

**Finishing Touch**

Mirjam Unger GVA

**Business manager**

Rinze Terluin (3120) 64.63.61

**Operations manager**

Christine Slot



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1007 AL Amsterdam

The Netherlands

Telephone: (3120) 64.63.61

Telefax: (3120) 62.90.64

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Language Technology

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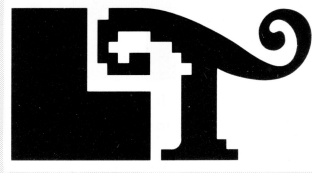
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## The Future's So Bright I Gotta Wear Shades. For Real.

The language industries are blooming.

Sales of WordPerfect, the most popular word processing program in the world, are headed for US\$ 100 million this year.

ALPS, one of the pioneers of machine translation, is about to release a mass market translation product that may radically change not just the translation, but the entire software market.

Microsoft has introduced Bookshelf, the first CD ROM software for the general market—and it's a reference work for *writers*, with dictionaries, thesauri and style checkers.

Digital Equipment Corporation's recent translator practices study discovered that half of all translators already work with computers.

IBM has announced that its AT-based voice recognition system now has a vocabulary of 20,000 words, or 97% of all words used in business—and is beginning to test it within the company.

The emerging language industries are being driven by twin forces: the demands of commerce and communication in an increasingly interrelated global village; and the supply of powerful new forms of language processing, the fruition of years of patient research and development.

Together, these forces will propel language processing ever more rapidly toward the center of creating and distributing word-based information.

You don't have to be a visionary to see the changes will be profound; even the near-term future is exciting. Word processors—the first language processing software—are about to undergo their most fundamental changes since they were developed, with the addition of grammar and style checkers and desktop publishing capabilities. Translation work stations are arriving, and machine translators are about to begin penetrating the business market place—already multinationals are installing and using them. And natural language interfaces and voice recognition systems for computers are about to reach the consumer, first with banking and financial services, to be followed by teaching and all manner of expert systems.

We launch Language Technology to chronicle and explain these new technologies. To show who is developing and using them. And to discover and convey the excitement of how they will affect our work, our lives.

Welcome to Language Technology.

*Jaap van der Meer*



# Slipping Into the future

B Y E R I C A L D E R M A N

**O**ver the years, I have had the opportunity to introduce many technophytes to the wonders of word processing. When I explained about the "dictionary" function of many word processing programs, they would say something like, "Wow, you mean the computer has a dictionary built into it, with all the definitions and everything?"

I, of course, would chuckle knowingly. "Oh no," I'd say, "this is just to check the spelling of the words. You couldn't possibly store all the information in a dictionary on a microcomputer. Think how much storage space you'd need." More wistfully, I'd add, "Maybe someday we'll be able to do that."

In fact, that dream of mine and many writers will soon become reality. For the first time, microcomputers will be able to store and access vast amounts of information, even the entire contents of a dictionary. This technology is CD-ROM (compact disk — read only memory).

At their annual CD-ROM conference in March, Microsoft announced Bookshelf, a collection of 10 reference works on a single CD-ROM disk. The product is targeted for writers and editors, although anyone who writes on a computer in English should find it attractive.

Bookshelf's main reference work is the American Heritage dictionary, with complete definitions of over 200,000 words. Next, Roget's II: Electronic Thesaurus has over a half-million synonyms, with over 87,000 keywords — at least double that of any other thesaurus program on the market. Other valuable works include: Bartlett's Familiar Quotations, with over 22,500 quotations; The 1987 World Almanac and Book of Facts, with over a million entries; and The Chicago Manual of Style.

Bookshelf is so exciting because all these references are now accessible with a computer. Maybe this seems like only a marginal improvement over leafing through the original paper pages, but in fact, it's monumental.

For example, you'll be able to type a remembered fragment of a quotation, then find every possible match from the entire

**Eric Alderman** is co-author of *Advanced WordPerfect: Features and Techniques*, published by Osborne/McGraw-Hill. He wrote articles for *MacWorld*, *PC World*, and *Computerland Magazine*, and his column "Word Rap" appears in *Computer Currents*.

Barlett's. If one of the quotes contains an unfamiliar word, you can look it up in the dictionary. All from within your word processing program, without having to remove your hands from the keyboard, or your eyes from the screen.

When released, Bookshelf will sell for US\$ 1,099 bundled with an Amdek Laser drive 1 CD-ROM drive. It will also be available separately for \$295. You will be able to access Bookshelf's data from within 14 different word processing programs, including WordPerfect, Microsoft Word, Wordstar, and Xywrite.

## Writing with Style

Tomorrow's word processing programs will be more aware of the contents of your documents. Instead of telling the program "this paragraph is indented," you'll say "this is a quotation." Rather than specify that some text should be "centered, and in boldface, 18-point type," you'll indicate that "this is a first-level heading."

What I'm describing are called style sheets. They provide several major benefits: they impose a consistent layout on a document; they facilitate formatting; and, they let you make major formatting changes fast, even to big documents. For example, suppose you need to create a complex document that in-

cludes many indented quotations. Ordinarily, you'd have to change the line spacing and margins every time you started a quote, then change the line spacing and margins back again when you were done. With style sheets, you specify one format at the beginning for indented quotes — the new spacing and margins, maybe the type as well. Then every time you type an indented quote, you simply apply the "Indented Quotation" style.

Now suppose that after you type the document and print a draft copy, you realize that the quotations should be brought in another half an inch on either side. Without style sheets, you'd have to manually alter the settings for each quote. Instead, now you can make the change throughout the entire document with one simple command, by modifying the "Indented Quotation" style.

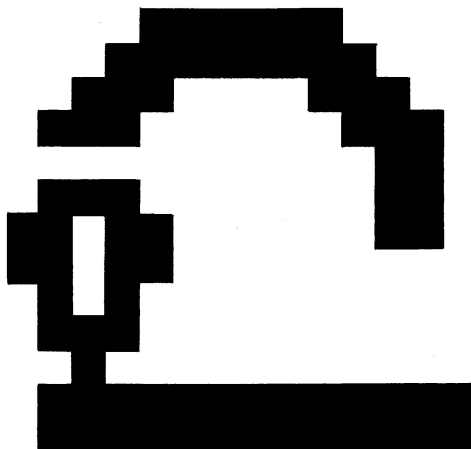
Once you taste the power of style sheets, you'll wonder how you ever got along without them.

## Finally, top of my word processing wishlist: desktop editing.

One of the applications that remains relatively unaided by word processing is post-editing. After an author writes an article or book using his or her word processing program, the text is frozen on paper. All further editing is performed by marking the printed output. Added text is placed in margins, between lines, where it will fit.

Somehow, this seems behind the times. I look forward to a graphics program which lets me do all this on screen — insert text in a distinctive font between lines, enter special editing symbols, and still doesn't deprive me of normal word processing functionality. Then the writer and all subsequent editors would be able to pull up the edited document on screen, and see all of the changes made to the original. When revisions were complete, a final copy of text could be saved on disk or printed.

Wouldn't that make sense? Too bad this application isn't imminent. At least, I haven't heard anyone talking about it yet. Nonetheless, I think it's a legitimate need — I know I would get a lot of use out of a program like that.<<





# a Profile of Current Translation Practices

By David Smith

Imagine receiving  
the following  
telephone call.

**"Good morning. We are designing a computer product for professional translators. To better plan our product, we'd like to know who translators work for, how they work, and their attitudes toward computers, in general, and computer-aided-translation, in particular. And we'd also like to know what they want incorporated in future products for their sector.**

Until recently, answering those questions might have proven virtually impossible. Knowledge of the actual practices of the translation industry has been fragmented and anecdotal at best. But now with the publication of Digital's "Translation Practices Report," a more complete profile of the translation community is finally available.

We distributed 1800 questionnaires, all in Europe, and received 300 replies from 18 countries. The respondents described themselves as not only translators, but also as revisers, editors or interpreters. The vast majority — 72% — work on a freelance basis, and the remainder work either in industry, with translation bureaux or for governments. Translation is, thus, still chiefly a purchased service.

The sample group reported quite high levels of training: more than three-quarters boasted formal qualifications, and many speak at least three languages. More than half of all the translation work they do is for business — technical/scientific texts and sales/marketing documents. The smallest share is litera-

ture, amounting to 4%.

Seventy-seven percent of translators felt that searching for terminology chewed up too much of their time. Almost all translators used specialized dictionaries, but less than 15% used terminology reference banks. Few professionals took the time to mark passages previously translated. The percent of a translator's time spent actually translating varied between 58% for freelance translators to a low of 33% for government translators; the rest of the time was spent in terminology look-up, client relations, pre- and post-editing, and accounting and administration.

One of the survey's most interesting discoveries con-

cerns the use and attitudes toward advances in computer aids for translators. A slender majority of the respondents (51%) have been won over by the word processor or PC and use them in their work. Still, users are not entirely happy with their new tools — only 47% expressed satisfaction.

One of the most frequent complaints was about the chronic lack of scientific characters and mathematical symbols. Another was the discrepancy between what translators saw on their screens and what actually printed out — in other words, lack of WYSIWYG. Others complained about the inability of small computers to handle text mixed with graphics, or even with tables and diagrams — entirely understandable since translators report encountering them in over 80 percent of the texts they translate.

Attitudes in the translation community seem be confused as to the benefits of the newest technology. Some translators are afraid that computers will put them out of business, while others fear for the creativity of their trade. When asked about the use of machine translation

(MT) and computer assisted translation (CAT), not many translators admit to having any substantial experience with them. As a matter of fact, 44% did not even bother to answer the question about their attitude towards MT.

Managers of large companies are, logically enough, more informed about MT than freelance translators who are as yet not very interested. The controversial nature of this subject is reflected in the fact that nowhere in the survey are attitudes so polarized as around the MT and CAT developments.

Instead of looking forward to CAT or MT, most translators are interested in more basic improvements in their equipment. High quality output devices are most often mentioned. Access to a screen editor also scores high on the list, as do such things as search and replace and on-line dictionary look-up. Interestingly, computer-based grammar and spelling checkers do not rank very high on the list of desired features, perhaps because they can only be used most effectively with computers with more memory and/or a hard disk.

Some surprises: 48% said they always translated into their native language, leaving an incredible majority of translation that is not translated into the target text by a native speaker. Pen and paper is still widely used in large corporations, while it is freelance translators who make widespread (80%) use of PCs, word processors or electronic typewriters.

Finally, there is still surprisingly little use made of modern data transmission methods between translator/agency and client. Only 2% of those questioned report using network data communication, while a similar number use floppy disks and magnetic tape — actually fewer than the 7% who still send hand-written text back and forth.<<

**David Smith** is the manager of DEC's International Engineering Translation Programme. He and Dave Tyldesley, a member of the Human Engineering and research group at DEC, co-wrote the report. Copies of the report are available from: Linda Hempel — RE02-F/B8, Digital Equipment Co. Ltd., PO Box 121, Reading RG2 0SU, U.K.



# Kobayashi's Dream

by Dr. Herbert R.J. Grosch

**A** dream we all share is the centerpiece of my old friend Arthur Clark's two movie scenarios: a computer you can interact with in complex, unfettered English.

One with a friendly voice; one you can reason with; one that knows what is happening in your area of mutual interest without being explicitly informed; one that works tirelessly and effectively while you sleep.

Another dream we all share is that of the chairman of Nippon Electric, Koji Kobayashi: to be able to call him in Tokyo and talk in English, and his computerphone will translate without delay into flawless Japanese. And the reverse, of course.

Where do we stand? Well, in a very few installations we have the friendly voice — strictly formatted, not artificially intelligent. The rest, no. Will we have a HAL by 2001? By 2010? In fifty years? Will we ever achieve Dr. Kobayashi's dream?

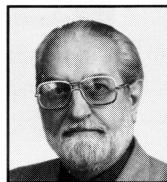
I was at the seminal conference on machine translation at MIT back in vacuum tube days. Fred Thompson had me brought back from Europe to take over his DEACON (Direct English Access and CONTROL) project in 1965. I wanted these good things to happen in the Fifties and Sixties. I still want them to happen, even it takes a century. But they are by far the most difficult tasks computer people have ever tackled. Make the problems of SDI looks easy!

It isn't the hardware. The machines are great, and still getting faster and more capacious and cheaper. We get a thousand times as much bang for a buck with VLSI as with those funny hot old bottles. There is no end in sight; when the dawdling speed of light and the dull restrictions of heat transfer hold back chip advances, weird new architectures will take over.

Consider multi-processing — the kind where each processor chip can do a fancy job, not where there are 1024 identical serial-by-bit adders on each substrate. We could put one processor chip to work on each paragraph of a translation. Same program, running asynchronously, of course. Under human command, we might even run through a second time, like a two-pass compiler, to allow for interparagraph context contributions. One gigantic terabyte of memory, one

fancy laser printer, one work station with a fast document reader, a hundred identical processor chips — oh, and one power supply! Not cheap, especially not now in the Primitive Late Eighties — but wait a few years.

There are two approaches to the central problems. The happy one, the one the dreamers tell us about in private conversations and DARPA proposals, I call the Piaget method. Kids learn to talk and understand — talk first, as I re-



**Dr. Grosch** is a computer pioneer still active at the policy level. He was the first manager of IBM's space program, has worked twice for GE, and twice for the US government — most recently as director of the Bureau of Standards institute which attempted to improve the effectiveness of government data processing. He lives and works in Europe, and consults for companies there, in North America and Japan.

member — by immersion in the culture. Why not immerse the natural language computer in vast quantities of text, and (ahem) encourage it to learn? Put that way, it sounds crazy, doesn't it? Well, it is. Unless the program furnished by humans to encourage the machine to learn on its own is as sophisticated as the mental processes of the adults and peers that kids rub up against, it won't work.

The other method is sheer hard work: to slowly and carefully build a bridge across the gulf between human and machine language, cantilevered out from our side, redesigned over and over again as deeper insights into human language and more powerful linguistic methodology become available.

The two dreams need the same tool. To write a long and complicated computer program starting with unrestricted natural language, or to translate from one human language to another, requires only that that gulf be bridged. English to FORTRAN, or English to zeros-and-ones to Japanese, are the same.

There is one ancillary problem of great current interest, and that is voice

recognition. Can we get the chairman of the board to work on a computer if he can talk at it instead of type on it? No, I think not, and I say that even though President Betancur of Colombia had a Wang on his desk when I was in Bogota. It's a problem of corporate cultures; execs want answers to unformatted questions, and until we have HAL, the computer needs carefully thought-out inputs.

For lower level uses the technical problem is blurred by economics. It will always, repeat always, be cheaper for an expert data entry operator to input coding or data than to have an expensive analyst or accountant fumble with a head cold, and voiced verification, and especially voiced correction. And those two jobs of program and data entry are much easier than producing an attractive business letter.

Voice input is already working at specialized tasks. It will be available for natural language tasks such as translation (where the perfection of program and data entry, and the elegance of business correspondence, are not necessary). Its future is assured — but not for everyday tasks.

Think of the typical learning curve: a slow start, a linear rise, a tapering improvement — automobile engines, for example. In my view, natural language processing has not gotten anywhere near the long-rise part of the curve.

We will not have a HAL in 2001, or in 2010 either. I doubt whether we will have even non-sentient, non-intelligent unrestricted English input to our computer systems by those dates. We may have the latter in 50 years, and that might permit Dr. Kobayashi's dream — far too late for him to benefit. For his computerphone, only performance as good as the typical human translator is required, not perfection.

We will never have really satisfying interactions with our computers until they understand us; our understanding them, which is pretty wonderful in itself, is clearly not enough. Throwing Pentagon money at the problems is a bad idea. Long and deep support by IBM, DEC and Unisys, and NEC and Fujitsu and Philips, is what is needed — in house, contracted out to bright little companies, and supported in good universities around the world. But, gentle reader, don't hold your breath. It'll be a while.<<



## Microsoft Bookshelf The CD-ROM revolution has begun.

**F**inally. The key piece of CD-ROM software that can attract a broad audience, drive sales of CD-ROM readers, and create the user base necessary to develop CD-ROM as a viable mass distribution medium. The name of that product: Bookshelf. And fittingly enough it comes from the company that's been the most vocal proponent of the medium, Microsoft.

In the last year, more than 130 CD-ROM titles have been released, but most have been vertical applications for specific markets like agriculture, chemistry, law, medicine, etc. And many have cost thousands, if not hundreds of thousands of dollars. Microsoft's Bookshelf, on the other hand, is a productivity tool for writers, journalists, editors and anyone creating documentation, and costs US\$ 295.

Microsoft Bookshelf gives the writer instant access to 10 useful reference works, including a 200,000 word dictionary, thesaurus, spelling checker, usage verifier, as well as The 1987 World Book Almanac and Book of Facts, a US zip code directory, Bartlett's familiar quotations and the Chicago Manual of Style. Accessed through its memory resident program, it can be used in conjunction with 14 word processors.

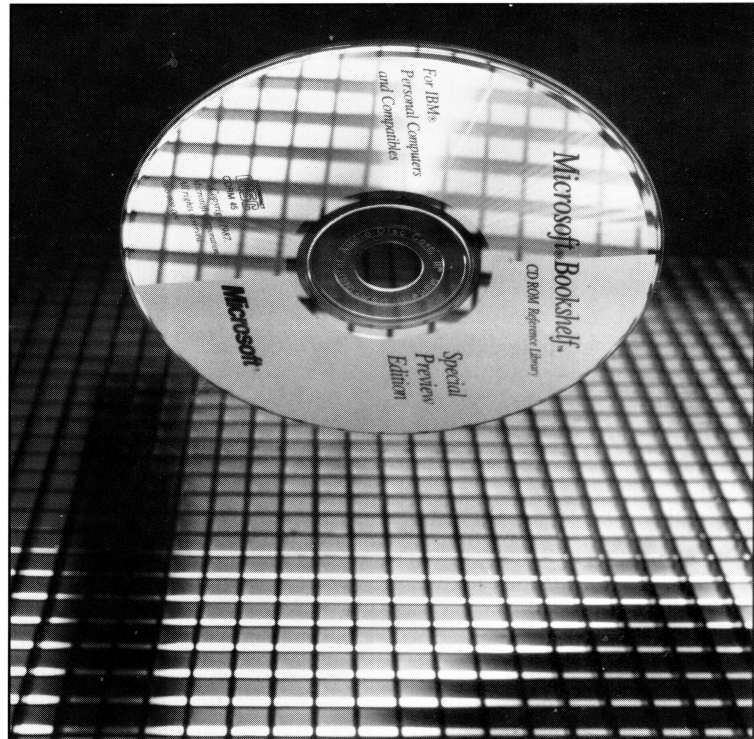
Since it is memory resident, users can look up information while editing a document. Since references are fully integrated, users can chain between them. For example, users can start with a single word, request synonyms from the thesaurus, change the keyword to one of the synonyms and look up its meaning. Information from references can be easily integrated into the document through copy and paste.

Microsoft is selling Bookshelf either alone, or in a package with an Amdek Laserdrive 1 disk reader for US\$ 1,000. The reader itself comes with two interface connections which enable users to daisychain up to four CD-ROM drives for access to more than one gigabyte of information. The reader also comes with jacks and a front panel volume control to function as a standard audio compact disk player.

Because of its prodigious capacity (one disk can hold 270,000 pages of text, or the entire Encyclopedia Britannica) CD-ROM was initially thought of as a mass

storage device. Increasingly, however, because of its durability, compactness, and relatively inexpensive cost of manufacture (pressing costs are around \$5), it is being thought of as mass distribution device. As an alternative to other electronic publishing, it offers access to

vast volumes of data without on-line charges. Equally exciting, CD-ROM offers the possibility of entirely new media forms. At the last two CD-ROM conferences, Microsoft demonstrated its Multi-Media Encyclopedia, combining text, audio, graphics and animation.



MICROSOFT'S BOOKSHELF CD-ROM

## Natural Language Understanding You Can Bank On

The Société General Bank in Brussels and a major New York money center bank are the first to use a new system called ATRANS to read unformatted, natural language telexes and automatically translate them into the machine-readable format used by the banks' automatic payment systems.

Developed by Cognitive Systems of New Haven, Connecticut, ATRANS uses knowledge-based parsing and text analysis to fill out a 20 item transfer form,

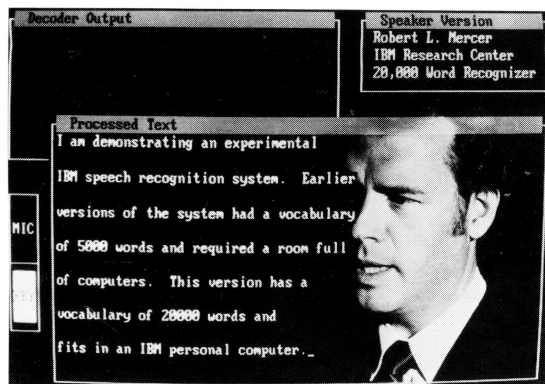
performing a job in 10 seconds that used to take a person 8 to 10 minutes. MCI International has licensed ATRANS and offers the same service to banks on a fee basis.

Cognitive Systems next financial product is a mechanical salesperson to complement the already familiar mechanical teller: a system which interacts with consumers to dispense information about financial products in a lowkey, consultative sales approach.



# IBM

## announces voice recognition breakthrough



IBM VOICE RECOGNITION SYSTEM

Scientists at IBM's Thomas J. Watson laboratory have announced the development of an experimental, PC-based, voice recognition system with a vocabulary of 20,000 words, 97% of all the words in use in business.

Words spoken into a small microphone appear on screen almost instantaneously. The system is speaker dependent, and requires the operator to perform a 20-minute session to train the computer to recognize his or her voice.

At the moment, the system is only capable of recognizing words separated by a brief pause. However, experienced users can speak to the system so quickly that the difference between "system-speak" and their normal speech is barely noticeable. Efforts at IBM to develop a system to understand continuous speech will now accelerate. That task, IBM admits, is more difficult, and the computing power necessarily greater.

The unique IBM approach to speech recognition is based on two statistical models. The first results from a speaker's training session which analyzes 200 of the speaker's sound patterns. When the speaker uses the system, it matches the sound patterns and creates a list of candidate words from the 20,000 word vocabulary.

Those candidates are then subjected to a second statistical filter, using a 25-million word database drawn from IBM office correspondence. Final selection is made from words most likely to follow the two previous words in the user's sentence. The system's "contextual" ability enables it to distinguish between different words that sound alike — such as "know" and "no" or "to," "too," and "two." Punctuation is added verbally.

The system runs on an AT carrying two powerful high-speed subsystems using IBM developed digital signal processors (DSP). Developed at IBM laboratories in Switzerland and France, the DSP chips can perform 30 million operations per second (30 mips). Each contains some 6,000 logic elements, or gates.

IBM refuses to speculate on when such a language recognition system might be available commercially. It is, however, beginning to test the system

## AI/Esperanto translator passes first test

The biggest hurdle in machine translation (MT) is ambiguity: how to get a computer to identify the right meaning of a given word or phrase.

Most linguists will admit that for a computer to correctly translate certain words in certain contexts it needs "real world knowledge." Such knowledge is one of the essential features of Artificial Intelligence (AI) expert systems.

BSO, a Dutch software developer, has been developing a machine translation system called Distributed Language Translator (DLT) which incorporates AI "real world knowledge." Funded by BSO and the Dutch government, the Dfl 15 million (US\$ 7.2 million) project also makes novel use of an Esperanto interlingua.

DLT was recently put through its first critical test by an American team at Brigham Young University, led by linguistics professor Alan Melby. The team input text samples previously unknown to the system.

These text samples were drawn from a corpus of UN and EC documents amounting to 500,000 words. The samples themselves had 480 different words.

Those words were supplied to BSO, in addition to another 320 random words added as a safeguard. This list formed the real world knowledge base. Researchers at BSO input not only the translation for each word, but also the appropriate combination of concepts. A dog might "bark," for instance, but never "delegate."

Five hundred thousand word combinations derived from the original 800 words were entered.

Test results heartened BSO researchers. "It is already clear," stated project head Toon Witkam, "that the system chose the right translation more often than expected and with a remarkable degree of confidence."

The system still has problems. Software bugs increased the error rate. And the DLT is still slow. But BSO expects to overcome these problems through reprogramming and the application of new technology, using CD-ROM and parallel processing.

The first commercial application, an English to French translator, is scheduled for release in 1992.

## A Blast from the Past Upgraded: WordStar

WordStar has bought New Word and released WordStar, Version 4, the first upgrade of the original WordStar since 3.31 (the illfated WordStar 2000, which doesn't look or feel like WordStar and even worse had an incompatible file format, doesn't count).

New features include line and box drawing, extensive math functions, access to DOS from within a file, multi-

ple-line headers and footers, indexing, table of contents generation, multiple-copy print option, user-selectable colors for bold and underlining.

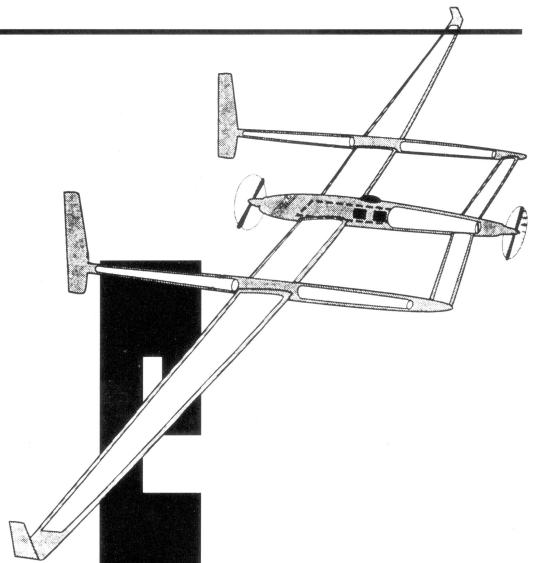
Notable is the the 220,000 word thesaurus, 40 programmable function keys, plus optional legal, medical, and financial dictionaries. US\$ 495 for WordStar 4.0, and \$25 each for the specialized dictionaries.





# ADOBE

## DOES IT AGAIN



Early users of Adobe's new ILLUSTRATOR are enthusiastic. Gary Cosimini, senior art director in charge of

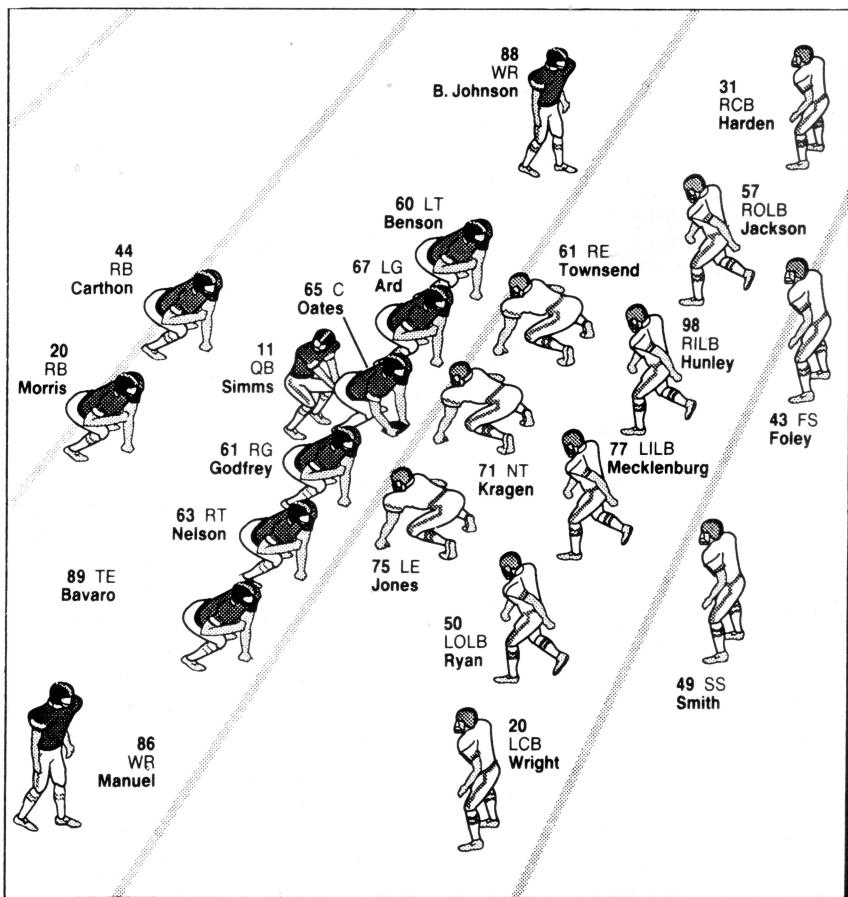
operations and technological development at the New York Times, calls it "nothing less than spectacular."

No wonder. Even complex technical illustrations can be produced with greater precision and in a fraction of the time it used to take by hand. That's because it's the first full implementation — that non-programmers can use — of PostScript, the page description language that's become the desktop industry standard.

Designers create illustrations either from scratch, or by "tracing:" using a sophisticated pen tool to pick key points on existing artwork used as a background template — a scanned photo, logo, blueprint, rough sketch or a MacPaint image. The "traced" image can then be manipulated with a full toolbox that includes functions for fills, gray-tones, rules, figures, as well as for rotating, mirroring and skewing parts of a drawing.

Type can also be entered, along with specs for leading, font, size, style and kerning. Text can be rotated and scaled, and its perspective altered. ILLUSTRATOR files are compact and transportable to any computer or printer that reads PostScript. Available now for the Mac, with a PC version in the works.

The next new product from the company that's a stock analyst's wet dream — it went public at US\$ 11 in June 1986 and is now trading in the mid-thirties after a 2-for-1 stock split — is rumored to be a font designer. Oh, and IBM has announced that it too is now supporting Adobe's Postscript language.



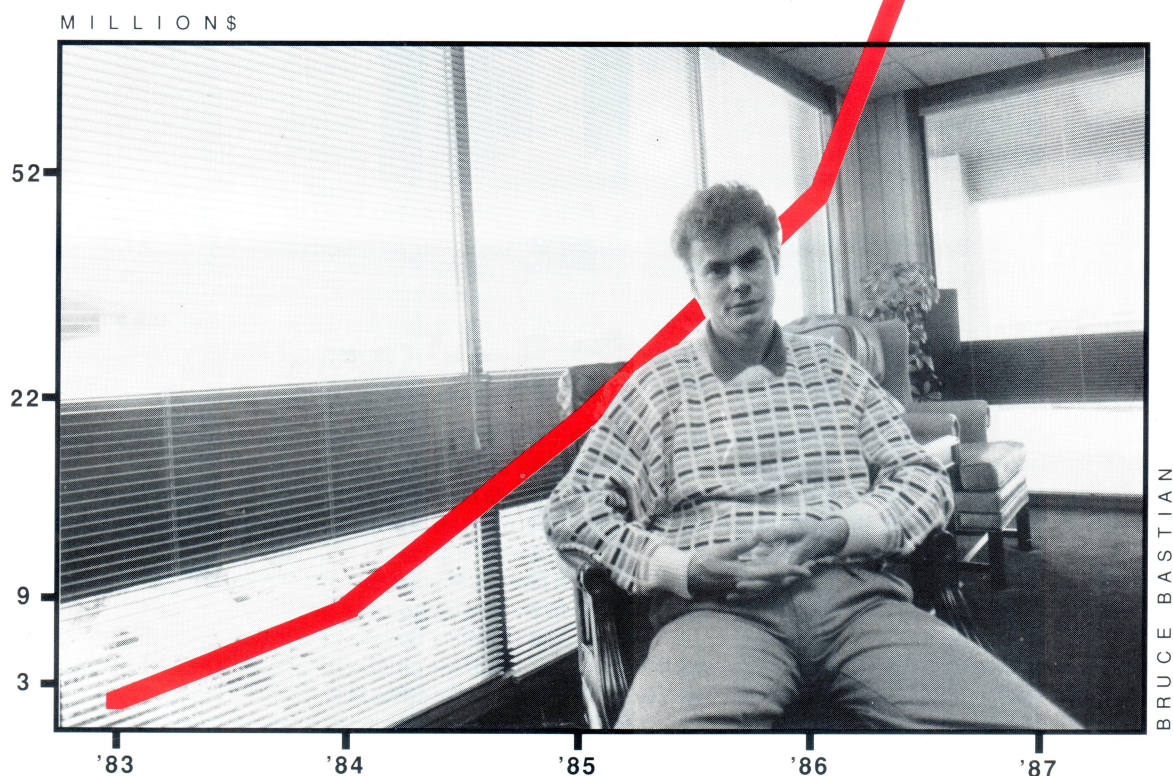
ILLUSTRATIONS NEW YORK TIMES





# WordPerfect Heads for US\$ 100 million

This man is Bruce Bastian. In 1979, working without a cent of venture capital, he and his former Brigham Young computer professor, Allan Ashton, began writing a word processing program at night on the Data General mini in the basement of the Orem City, Utah town hall. Two years later, Bastian and Ashton emerged with a program and gave it to the city's secretaries to test. When the first PC was introduced, they raced up to Salt Lake City to buy it, propped it up on its carton, and began to port the program to DOS.



When they released WordPerfect, WordStar was the king of the mountain of word processors. But WordPerfect had a few advantages. WordStar was written for 8 bits, while WP came from the DG 16 bit environment. Its assembly language coding was excellent. And it was powerful, as well as user-friendly, unlike WordStar. InfoWorld gave it an unprecedented four diskette out of four rating.

The first year WordPerfect was released for the PC, it did US\$ 3 million in sales, versus WordStar's US\$ 60 million. Then in 1984, WordPerfect sold \$9 million, \$22 million in 1985, \$52 million in 1986, and projected for 1987, a nice

round \$100 million. WordPerfect is now the fourth largest software company in the US after Lotus, Microsoft and Ashton Tate. All done with a miniscule ad budget and an abiding faith that a good product will always find a market.

That copy of Fortune on his desk, the one with Bill Gates of Microsoft on the cover, does he have any plans to take WordPerfect public? No, he answers, the only reason he'd take WordPerfect public would be for estate planning or to hold on to key people. In other words, the same reasons Bill Gates took Microsoft public.

What does WordPerfect have up its sleeve for the immediate future? WordPerfect wants to take control of the

business market, and it intends to do that by insuring that a WordPerfect document can be used across all possible environments. So right now they are busy porting it everywhere, to IBM mainframes, Vax and Macintosh. And because they can't afford to stay out of it, WordPerfect is also developing a desktop publishing program for release late this year. And WordPerfect is about to go international in a bigger way, buying out its Dutch, German and French distributors and forming WordPerfect Europe.

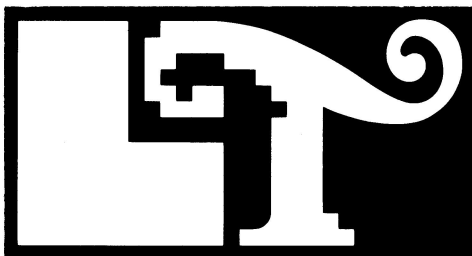
And long range? He might speculate about a word processor you could talk to, but there are non-disclosure agreements with IBM, you understand...

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- A peek behind the Iron Curtain to find out about Soviet research in natural language processing.
- Two important language projects from a nation of linguists, Holland: the much discussed BSO interlingua project, and Philips's Rosetta R & D effort, described as the 'most elegant' being conducted in the world today.
- A US company's Socratic learning program, an AI-based natural language understanding system.

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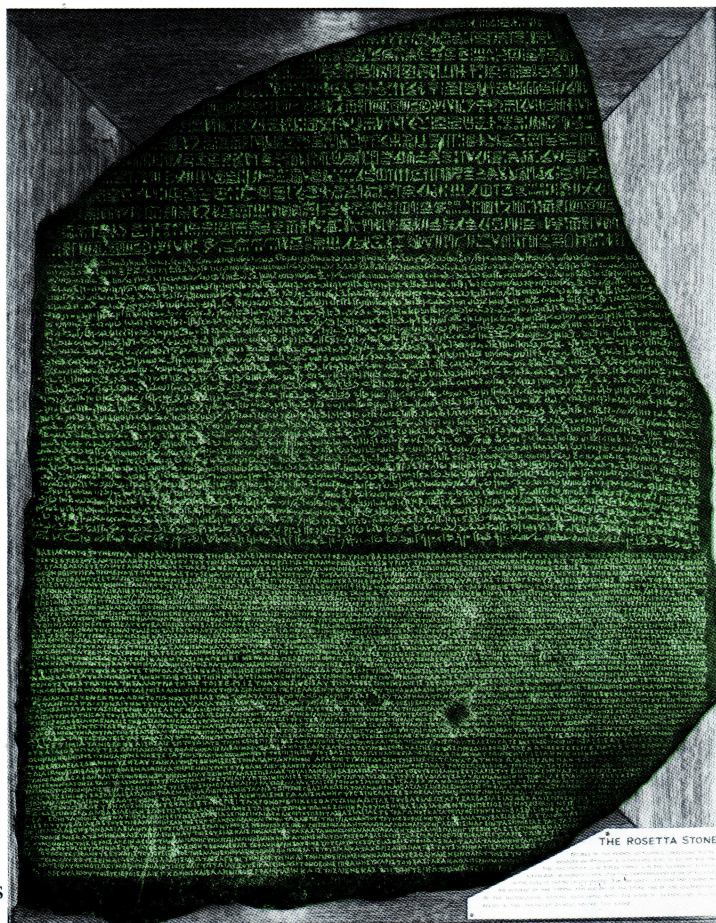
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# ROSETTA

Rock-Aided-Translation



THE ROSETTA STONE

**T**he initial success of Napoleon's invasion of Egypt had Parisians walking like Egyptians in a national Egyptian craze. But back in Egypt, Napoleon's troops soon found themselves under attack from the Turkish army and the British Mediterranean fleet.

So the French dug in at various sites, one of them near the town of Rashid (French Rosette; English Rosetta). There, the spade of a soldier digging a trench unearthed a polished basalt slab — the slab which was to unlock the still undeciphered mysteries of Egyptian hieroglyphics, the second oldest form of writing in the world after Sumerian.

The Greek text on the slab stated that the same message was repeated in the three languages on the stone: hieroglyphics, Coptic and Greek. After the French surrender of Egypt in 1801, the British brought the stone as war booty to London, where it still resides in the British Museum.

English physicist Thomas Young

made the first tentative breakthrough by determining that a cartouch (an oval figure enclosing hieroglyphics) represented the name Ptolemy.



But the person actually responsible for finally unlocking the stone's mysteries was the brilliant French Egyptologist Jean Francois Champollion, who even as a boy had the idée fixe of wanting to be the first to decipher hieroglyphics. His crucial, and surprisingly simple, breakthrough: he counted the Greek words and the hieroglyphic signs and found three times as many hieroglyphics as Greek words. But since the two texts contained the same message, some hieroglyphics had to be sounds, not just single words. Hieroglyphics was thus a phonetic alphabet.

Champollion turned to the cartouche

Young had discovered was Ptolemy. It contained seven different signs. Champollion assumed that each represented a different sound. Cleopa-

tra, Champollion realized, contained many of the same letters as Ptolemy. When he checked the cartouche for Cleopatra, he found, exactly as he had expected, that symbols matched those in Ptolemy. And so, by applying phonetic values to names he found in dozens of Egyptian inscriptions, not just on the stone, but on obelisks and papyri, he was able to decipher the meaning of hieroglyphics.



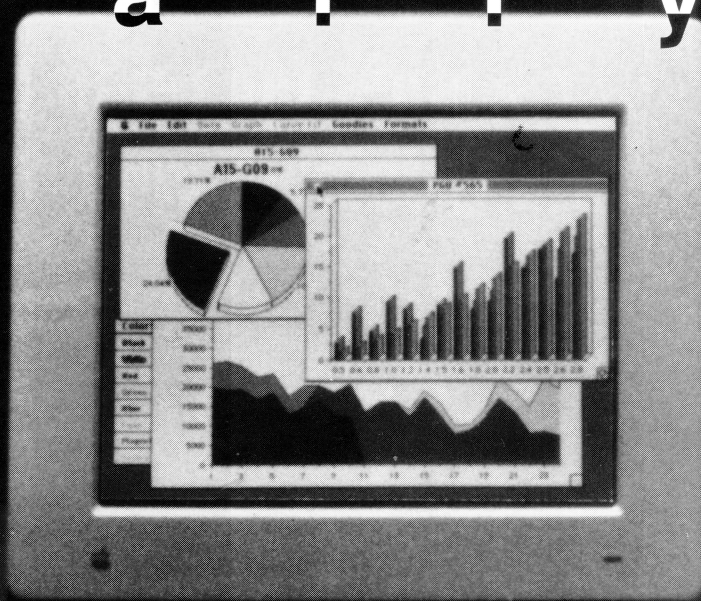
One surprising discovery: Champollion found that although hieroglyphics were phonetic, the symbols were different from alphabetic letters; used in combinations that varied from word to word and from text to text, they made hieroglyphic writing a hodgepodge of consonants, syllables and symbols that serve to clarify word meanings.<<





F i n a l l y !

# The Open Mac



## THE PORSCHE OF PC'S

**A**t last, the machine the Macintosh should have been in the first place (no joke, since the original Mac, read it and weep, was designed with an expansion bus which got lost between development and production).

Officially called the Macintosh II, it's fast and powerful, able to plug into the DOS and UNIX worlds, and it still runs all the graphics, desktop publishing and user-friendly programs, like Excel, which were responsible for doubling Macintosh sales last year -- boosting Apple's earnings by over 150% at the same time as IBM profits sagged.

The specs: the Mac II has a 32-bit Motorola 68020 chip running at 16 megahertz, or two and a half times faster than the Mac Plus. The Mac II can hold two floppy drives, an 80 megabyte hard-disk with an access time of 30 millise-

conds, and up to 8 megabytes of memory on the logic board. It comes with six expansion slots and, Mac users will be happy to know, has a decent keyboard with function keys.

Available are sharp, 640 x 480 pixel color and monochrome monitors, capable of displaying millions of colors and shades of gray respectively. The first third party card (from AST) is a 80286 processor, which finally gives the Macintosh world access to DOS files and programs. In addition, Apple is also offering a version of the UNIX operating system.

Flies in the ointment? First, Mac II's will be scarce until June, maybe even September (apparently Apple felt the need to weigh in before IBM's April announcement). Second, the clock speed is the same as the Compaq 386, but its mips aren't — 2 instead of 4 for the current version of the 386, which can al

ready be boosted to 25 megahertz and 6 mips (millions of instructions per second). Why, skeptics are asking, didn't Apple set the clock speed to the 25 megahertz the 68020 is capable of? Or better yet, why didn't they pick the new 68030?

And finally, there's the price. Apples have never been cheap, and this one is no exception. If you want a Mac II with a 40 megabyte harddisk and color monitor, 2 megabytes of memory, and an Apple 5.25 inch drive to run DOS, expect to shell out over US\$ 9,000 or 50 percent more than for a Compaq 386. And then you'll still have to buy the DOS expansion card. Then again, Apple perceives itself as different from Compaq, which has the reputation of being the Mercedes of the PC market.

"We'd prefer to be thought of as the Porsche of computers," the Apple publicity woman explained.<<

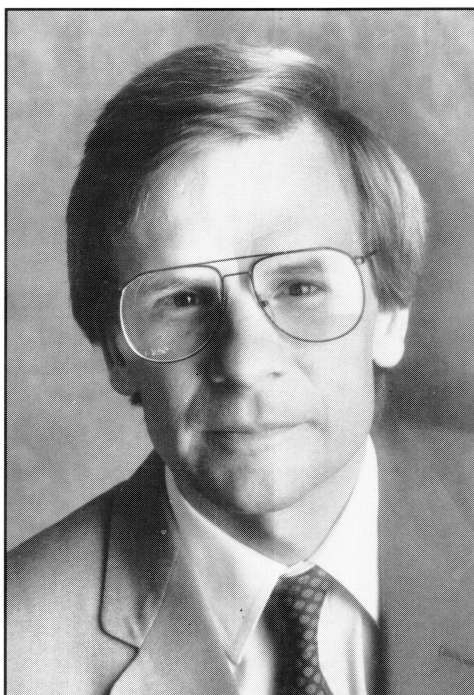




# Ten Questions for Mr. DTP

Look into Paul Brainerd's eyes. They are inordinately attentive. Those thin lips answer you with precise, clipped, fully-formed thoughts. That high forehead beams a crackling intelligence;

his surname seems eerily appropriate. Serious and quick as a whippet, Brainerd is president of Aldus Corporation, the publisher of PageMaker. He is said to have invented the term desktop publishing.



## **Tell us about forming Aldus.**

"I was a vice president at Atex [makers of large publication systems for newspapers and magazines]. About the time it was bought by Kodak, I and few others left to develop a publication system that could run on personal computers. It took us a year to develop PageMaker."

## **Who originally financed Aldus?**

"Aldus was initially financed with less than a million dollars in venture capital from, among others, Vanguard Associates of Palo Alto."

## **Has Aldus needed additional financing since?**

"Aldus has been profitable since the second quarter after we began shipping PageMaker in July 1985."

## **What are Aldus's sales figures like?**

"Since Aldus is privately held, we don't release sales figures. What I can tell you is that there are 50,000 PageMakers installed worldwide, and," he opens a computer printout, "that according to the National Computer Retail Report, PageMaker sales in the retail channel occupy the number four position in

dollar volume, after some names you've heard of: Lotus 1-2-3, Lotus 1-2-3 Version 2, and dBase 3+."

**Steven Jobs described as "brain damaged" the Hewlett Packard decision not to support Adobe's PostScript page description language and instead push its own interpress DDL. Yet Aldus has signed on with Hewlett Packard, along with Microsoft, to support DDL?**

"Let me put it diplomatically. Our including DDL support in PageMaker was a strategic business decision. If you want my personal opinion, Hewlett Packard is going to have a tough time advancing DDL, and we told them so."

## **Do you have other strategic alliances in the works?**

"We have just announced that Digital Equipment Corporation will be distrib-

uting PageMaker to its users in the US, UK and Canada."

**Recent reviews of PageMaker's rivals like Xerox's Ventura Publisher and Letra-Set's ReadySetGo! rated them above PageMaker in certain areas. Will Aldus respond by offering features like Ventura's style sheets or ReadySetGo!'s pipelined, batch text placement?**

"We don't comment on future plans so people don't begin anticipating and delay purchases. Suffice it to say we are studying all possibilities."

## **Any new products coming?**

"We plan further additions to the PageMaker Portfolio line of style sheets we started last year, the first of which was for newsletters. Future releases will include brochures, manuals and documentation, and catalogs and price lists. And we are preparing an advanced PageMaker Classroom teaching program."

## **Finally, to set the record straight, did you really invent the term desktop publishing?**

"Yes," he answers, the flicker of a smile flashing across his thin lips.<<



# METAMMO

pany

the plains of the Remington print on his office wall had jumped out of the picture and landed in the chair behind his desk.

Time. Some, like the chief technical honcho Brian Gessel, have been involved with the software for sixteen long years. The grin that cracks across his face like a rupturing fault line is answer enough to the question of what it feels like to have finally made a profit in 1986.

- 14 -



style

Options

# PROS AND CONS

very farseeing — or stupid — stayed in the business. And now the market is ready to explode." He chuckles richly. "And you can't just go into your garage to make one."

For Merrill Berman of the New York investment advisors Berman Kalmbach, time means the future. "Their promise is exceptional. They're in the vanguard of natural language processing, the software of the future. They have a big, a very big future."

## MacProof improves ALPS style

With a product line that stretches from a mass market style checker to computer-aided translation (CAT) software to a linguistic development environment with AI potential, ALPS is the first company which embraces all aspects of the language industry.

"You can count on one hand the companies whose revenues come from translation or natural language," says Fred Zirkle. "And we're already profitable."

That they are. Thanks to a little help from the new Statement 86 of the fi-

nancial Accounting Standards Board, which allows companies like ALPS to capitalize software R+D costs. And a product that shot out of nowhere to become a mass market software hit.

"They had this perfectly good little style checker program that they developed under a grant from Weaver State College for networked Macintoshes," Dennis Sullivan explains, his shirt collar open in an office full of ties and jackets. "It was used in writing-labs and the students loved it. I asked Fred for US\$ 100,000 and a little time to prove there was a mass market out there for the product." He laughs. "We're shipping a thousand MacProofs out the door every month now."

"Beyond the cost of development, you know what it costs to make an extra copy of a software program?" asks Merrill Berman of Berman Kalmbach, New York investment advisors. "Maybe four dollars for the disk, package, shipping — that means every sale beyond the cost of advertising is pure profit. MacProof sells for US\$195. They're

projecting moving US\$2 million dollars worth of MacProof in 1987."

Dennis Sullivan lights a cigarette, a most un-Mormon thing to do in this 95 percent Mormon company. "We just signed to do a Japanese version. Apple is thrilled because the program is so good schools are buying MacIntoshes to run it. We're talking to Apple about doing a joint marketing program." His eyes become wistful. "But if MacProof is selling 1,000 a month to a million installed Macs worldwide, think how many you could sell to the 21 million installed PCs?"

The PC Proof product is due in February 1988.

## New emphasis downmarket

But that's not the only low end product in the pipeline. The long-rumored "ABC" product — consciously named after 123 from Lotus, the spreadsheet that still dominates the category of software it created — is officially scheduled to be released in June of this year.

Running under DOS, ABC is a resident

memory program with a demand-mode pop up menu which gives access to a planned family of add-in natural language programs. From multilingual dictionaries for computer-assisted-translation (CAT) to grammar, style and spelling checkers for writers.

"We want the IBM philosophy to be at work here," Dennis Sullivan says. "The client buys one box at a time. If you want more, you pay more."

The shell will be priced in the range of 200 to 250 dollars, and the bilingual dictionaries between 50 and 150, with industry specific dictionaries going for 200 to 325. The first industry specific dictionary will be banking.

And if that isn't mass market enough, then how about the ultimate mass market translation product, a quick and dirty translator, with the official project name GIST, that goes for 600 dollars and is due in the fall of 1987? Nothing that could do a real, grammatically and syntactically correct translation, mind you (indeed, inside the company the product is referred to as WIMP, precisely because it isn't a sophisticated translator). Instead, it's designed to tell you what's in

that letter in Portuguese you received this morning from the Brazilian computer company.

"The language barrier is one thing that limits sales," Dennis Sullivan grins. "Every company in the world is a candidate to own one."

Pie in the sky? Except that Dennis's strength is mass marketing — he won a Cleo, the Oscar of advertising, for that mass market behemoth Anheuser Busch and its Budweiser beer, the best selling beer in America.

### Expanding the Upper End

Despite ALPS's recent success in the mass market, however, it has no intention of abandoning computer-aided-translation software and development.

"I envision a company that will be the leader in natural language, and specifically machine translation," Fred Zirkle says. "I don't know a bigger concentration of computational linguists and systems developers than ALPS."

Those linguists and systems people are currently working on development projects with four of the top five computer manufacturers in the world: IBM,

UNISYS, DEC and NCR. These projects include porting over existing software, as well as developing a Document Revision Facility (DRF) for IBM European Language Services, and Korean, Japanese and Chinese versions of the translation software for IBM Japan.

In addition Eureka, the European research funding apparatus made up of the European Community (EC) plus seven other European countries, has funded ALPS's Swiss subsidiary to develop a project called Mobidic, along with the Dutch Van Dale and the French Robert, publishers of high quality dictionaries. And discussions are underway with Apple and Microsoft.

And in Asia, ALPS is in the final stages of negotiations with three major computer players: Fuji, the above-mentioned IBM Japan, and in Taiwan, with the Electronics and Research Organization of ITRI, a government-owned electronics company. Each contract is worth between a million and two million dollars, and will run for 18 to 24 months.

It fits in with a fundamental ALPS strategy: create development partnerships with leading users and possible third party sales organizations, get users to pay for development of technology, then repackage technology and resell it to other potential customers.

"To be a development company," Fred Zirkle says, "you have to be in the market. It's okay to do university research, but in the development business you have to realize that our only purpose is to save our customers money. And be profitable doing it, to insure ongoing research and development."

The Asian deals it is presently negotiating, for instance, provide ALPS partners with the rights to market the fruits of the joint development within local spheres of influence, either Japan or Asia in general. But ALPS reserves the rights to market in North America and Europe. And in the case of the Taiwanese contract, ALPS also retains the rights for mainland China, which could be extremely lucrative if ALPS can make the right connections.

### Other targets

Another market ALPS is targeting this year is larger translation bureaus. In January they cut the prices of their translation software, dropping the price of the shell and source text analyzer to 1500 SF (US\$ 1,000), and AutoTerm with first source language to 5,000 SF.

And still another market is other developers of translation software. They have begun licensing paid beta sites of their PeriPhrase natural language development environment (at US\$ 24,000 a throw for single CPUs, plus royalties on



## THE ORIGINS OF ALPS

**T**his is the story of the metamorphosis of a development company to a market aggressive company — from a university orientation to the hard world of business. They teach you things in university, but not deadlines."

Brian Gessel has been there since before there was an ALPS.

"Late 70, early 71, Professor Eldon Lytle had a student who was looking for a master's project. A recent Phd. graduate himself, he had a theory of linguistics — junction grammar rules. So he organized a little research project to make a prototype Russian to English translator.

"Then students started appearing out of the woodwork, interested in machine translation. And the project got funding from the Air Force, a father of a student, and the LDS Church, [Latter Day Saints, in other words Mormon]. The LDS Church's interest in machine translation is obvious: it's a missionary

church with a need to communicate in different languages all over the world. Two million dollars came from the LDS Church, the largest contribution.

"I joined in mid-1972. The goal was to develop machine translation from English to several languages. Initially English to French, German, Spanish and Japanese. Later we added Portuguese and dropped Japanese. In 1976, we added Chinese.

"The project kept getting bigger and more important, finally becoming the Translation Sciences Institute at Brigham Young. A private donor bought us an IBM mainframe for the project. The staff grew to 15 full-time and 15 parttime.

"Finally, at the end of 1979, we finished a prototype. Since the LDS Church had been providing most of the funding, they evaluated it."

Their reply?

"They said it was nice, but — it wasn't adapted for a production environment," Brian Gessel winces like it

still hurts. "You see, we thought we were developing a product, but we weren't constrained by the real world."

Funding dried up in 1980. Brian and five others left.

Then the miracle happened. Rich automotive dealer Rick Warner came across a Weidner prospectus, discovered machine translation and started ALPS with five ex-TSIs.

"Then it starts picking up old TSI people — most principal BYU researchers," Brian Gessel continues.

"Meanwhile, Weidner's operation out here started crumbling — there are over a dozen ex-Weidner people here now."

And about that early decision to develop an interactive translation system, not a batch translator?

"Automatic translation is a big misnomer," Brian Gessel answers. "There's nothing automatic about it if you have to go back with translators and edit the translation. It's really just automating part of the process."



sales of products developed with it) which runs on PC RTs and DEC, while DOS is still being tested. Created to develop their own software, PeriPhrase "allows a beginning linguist," Brian Gessel says proudly, "to output code that only an experienced computational linguist with heavy programming skills could do previously."

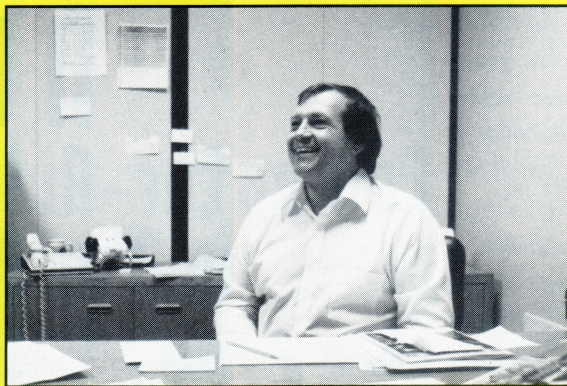
But development of translation systems is only one of its possible uses. Another and perhaps even more profitable use is for developing natural language interfaces for databases and other programs. The first customer: Computer Cognitions, who are using it to develop natural language front ends for their programs, one of whose main customers is the US military.

### The future

"In the next few years, we are going to do a massive technological transfer to Europe," Fred Zirkle states. "We see an obvious need in Europe to focus heavily on development on a local basis."

"Seventy five percent of the translation market is in Europe," Dennis Sullivan adds.

Meanwhile, research in the US will continue to expand. A new facility is planned for Salt Lake City on the University of Utah campus. ALPS is hiring additional linguists in anticipation of new offerings in Portuguese, Spanish, Arabic, Hebrew and Scandinavian lan-



D E N N I S S U L L I V A N

**T**he first Christians get the best lions," he chuckles. "It used to be funny until I came here. What are we," he asks his assistant Eugene, "85 percent LDS? 90?" Dennis Sullivan, ALPS

marketing director. Definitely not Mormon. Former Disney cartoonist (he worked on the sequence where Dick Van Dyke dances with the penguins in Mary Poppins). Later, he wrote songs and played guitar in the rock group Help.

two albums out on Capitol.

More recently, he's won a Cleo for Budweiser beer — a campaign for the military market, perhaps the first purely surrealistic theme in advertising history, with sailors loading Budweiser bottle shells in Budweiser shaped cannons, or marching rows of Budweiser cans, with little Budweiser cans on their shoulders, or a fly-by of Budweiser bombers, dropping little Bud bombs, with the headline, "Buds Away!"

Dennis has a simple, straightforward philosophy of marketing. "Any reasonable product can be promoted. And if it lives up to its promotion, it'll sell. We want to make ALPS the de facto standard company for translation. When you think of translation you think — Kleenex."

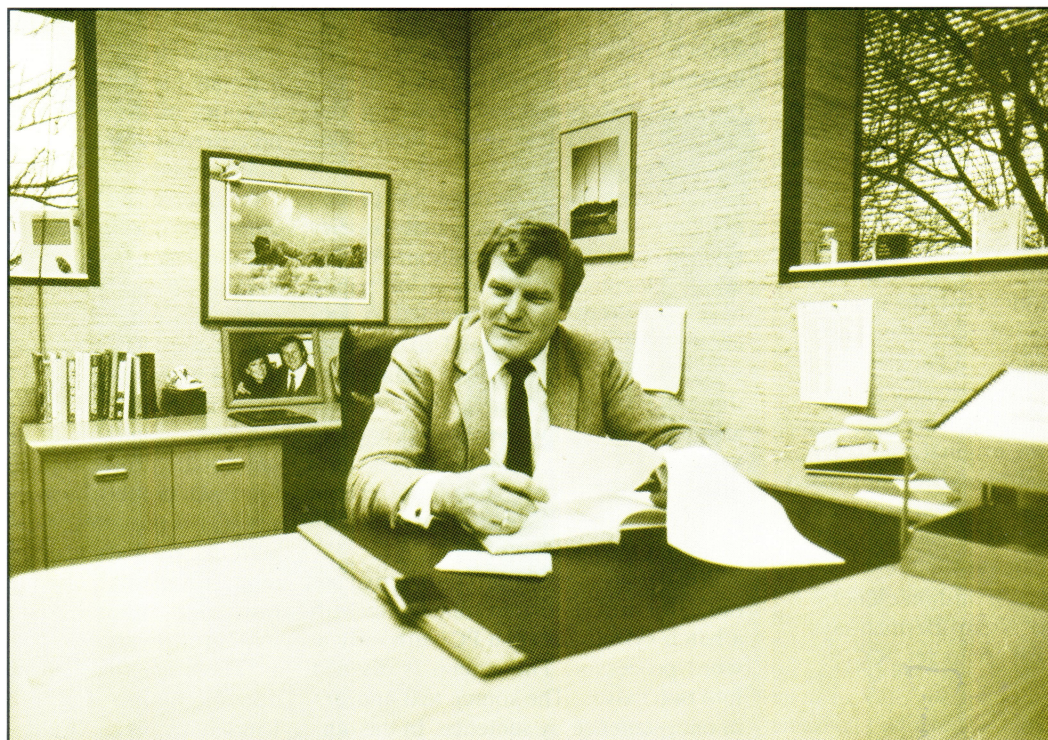
He chuckles.<<

guages. And they talk of tripling their research staff in the next three to five years.

"A lot of computer companies bring out one product, are successful, bring out another product, and it's not quite as good as their first and they just trail off," says Dennis Sullivan. "I believe that every successive product you bring

out has to be better than the last — which is why I'm so enthusiastic. And because we're going to be spending a lot of money on advertising in the coming year.

"ALPS could easily be a 100 million dollar company in five years," their investment banker Coleman Abbe of Evans and Company boasts.



F R E D Z I R K L E



## Worries?

"We can see a competitor coming five years away," Fred Zirkle replies, squinting his calm, steady blue eyes. "It's a luxury I've never enjoyed before. And by the way, we would welcome at least one major player — to add to the credibility and quality of services that machine translation vendors supply."

Where will that competitor come from?

Brian Gessel has no doubts. "Japanese companies," he declares unequivocally. "Fuji, Fujitsu, Hitachi — there are no fewer than eight really serious projects committed to developing MT systems. So big, so well-funded."

And what of those reports that the source text analyzer, the core of the translation system (see sidebar on NCR) is buggy and slow, taking hours to crunch text and producing dictionaries, sometimes crashing?

Brian Gessel's grin becomes forced. "We're working on speeding up the Source Text Analyzer."

Or that a decision of the American Accounting Board to allow software development expenses to be capitalized was what's responsible for the profit last year.

"Oh, you noticed that," Dennis Sullivan smiles impishly.

"It's perfectly justified," Coleman Abbe replies. "The old rule was unfair. Why should the cost be fully expensed before the product is even brought to market?"

## Wall Street

In any case, ALPS is starting to attract attention on Wall Street. In a year-end article, the Wall Street Journal called ALPS one of only three successful artificial intelligence companies — artificial intelligence being this year's buzz word in the investment community.

"ALPS has four things going for it," Coleman Abbe of Evans and Company states confidently. "One, it doesn't have a single competitor. Two, the managers' heads are screwed on right, they know where they're going. Three, they're continuing to do all the necessary research. And finally, they are not making me-too products — all are original and well thought-out. Quality houses with broad institutional accounts are starting to make the trip to Utah."

How big could it get?

"Imagine selling a million clone-related products," Merrill Berman says. "That's how big it could get." <<

# NCR

## Computer-Aided-Translation in the Real World

**W**e're quite happy with the ALPS installation," reports Alain Linden, head of NCR translation services at NCR France from his office overlooking Paris at La Défense. "While we are not up to full speed yet, the monthly figures are quite close to our projections."

NCR bought the entire ALPS package, called TransActive. It runs on a DEC MV 4000 (about to be switched to an NCR Tower) with six megabytes of memory, a 354 megabyte disk, seven terminals, and two NCR PC6s (AT equivalents), one of which is equipped with an optical reader.

### What is this brave new world of computer-aided-translation like?

After installation of the hardware and software at NCR, the first step in the process of automating translation with TransActive was the preparation of two company dictionaries, one for computing and the other for telecommunications. Three linguists worked for two months compiling an English dictionary with 18,500 English words and 26,775 French equivalents. The dictionaries are essential to insure consistency, by removing ambiguity and reducing the scope for translators to use more than one term in translations.

Translation itself is a three step procedure: document preparation/analysis, dictionary building and translation. For example, documents coming in on paper have to be prepped, then scanned. A document dictionary is created to find out which terms are not already included in the company dictionary. Those which aren't are checked with engineers and developers for exact meanings, then integrated in the company dictionary. Finally, the translator works with the program to translate the text.

Work procedures with TransActive are radically different from translating with a batch system, or on a PC with only a word processor. The screen is divided into two halves. The source text appears in one, sentence by sentence. In the other half appears the suggested translation.

If the translator finds it acceptable, he or she presses a key and moves on to the next sentence. If the program comes across an ambiguous word, term or reference, it queries the translator, offering a selection of alternatives across the bottom of the screen. The translator then presses a key corresponding to one of the alternatives, the program integrates it into the sentence it is working on, then continues.

"Translators like the system," Alain Linden says, "especially the younger ones. They no longer do a translation, they manage it. They prepare, make dictionaries, organize. And since it's not complete machine translation, they have none of the drudgery of post-editing."

### Bottom line realities

Installing a TransActive system is not cheap. It cost NCR France 1,450,000 French francs (about US\$ 200,000) just for the hardware. Software and support for the first year cost 1,150,000 francs.

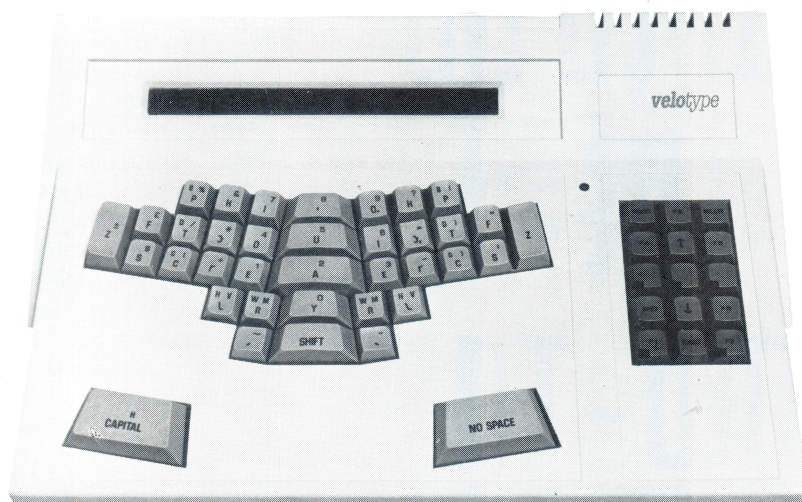
Is it a good investment? According to NCR, output for the first year is projected to be 2,700,000 words, or 61,000 per translator per month, for a cost per word estimated to be in the range of a franc. Skeptics might point out this represents no cost saving over independent translation bureaus.

Of course, NCR's first year costs include the one-time costs of dictionary building and learning while getting the system up and running. They also include equipment costs which might be less if the DG mini computer was replaced with a 386 machine. And outside agencies might not be able to maintain the same standards of consistency, nor provide text formatted so as to be ready for desktop publishing, and the attendant savings it provides. NCR intends to install its own desktop publishing system. Problems? The lack of collaboration from other divisions and plants writing software.

"There are fourteen plants producing documentation and products," Alain Linden replies. "Each uses different equipment. Some even use typewriters."



THE VELOTYPE KEYBOARD



# ARE YOU THE Velotype?

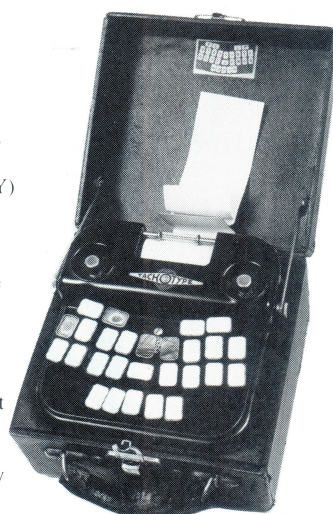
**The Secret  
Is In The  
Syllables**

The **Velotype** keyboard, once described as the word processing discovery of the century, owes its speed to the fact that typists are inputting whole syllables instead of individual letters. The word SI-MUL-TA-NEOUS, for example, will be typed in four keystrokes, compared to the twelve keystrokes necessary on a traditional keyboard — 300% faster. In addition, the keyboard's layout is much more logical and ergonomic than that of QWERTY or AZERTY.

The Velotype keyboard is arranged in three sections. Vowels (A, E, I, O, U and Y) occupy the middle section, and consonants reside in sections to the left and right. In addition, Velotype knows the order in which letters most usually occur. If, for instance, you intend to key in the word SPORT, Velotype makes sure that it is not PSORT, PSOTR or SPOTR that gets typed.

Velotype was invented by the late Mr. Den Outer, an imaginative stenographer, and the dedicated linguist Berkemans, who built into Velotype its impressive body of linguistic research and ergonomic intuition of English, French, German, Italian, Spanish, Dutch and Swedish.

AN EARLY STENOGRAPHIC MACHINE



At its 1983 launch in Amsterdam, Velotype seemed bound for glory. Leading publications the world over carried photos of its revolutionary butterfly-shaped keyboard, accompanied by gushing reviews of its ability to improve typists' productivity by up to 300%. Tired old QWERTY seemed destined for the scrap-heap of history.

**F**our years later, however, the traditional keyboard, with its five-hand-wide layout, still holds sway. And old notions of speed die hard — a typist capable of 350 keystrokes per minute on a surface that big is still considered fast. What happened to Velotype, the syllable-based keyboard on which an experienced user can zip along at as many as 900 keystrokes per minute?

The answer is to be found in what Special Systems Industry, Velotype's producers, calls "re-education." Velotyping is so different from normal typing that fledgling Velotypists need to take a two week course to attain the promised productivity increases. And then — here's the rub — a 200% productivity increase can take up to six months to attain.

Velotype argues that this sounds more dramatic than it really is. Two months after the training course, a new Velotypist will have returned to his/her old productivity. By the sixth month, productivity will have at least doubled — meaning that only one week of net output was lost.

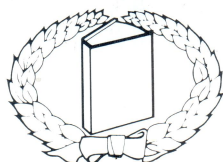
Thus the financial consequences of lost output involved in retraining are really mute. The psychological aspect, however, is less easy to overcome. For employers smaller than the multinationals which have already adopted Velotype, six months can seem like the next century. And then actually doing without a secretary or typist for longer than a couple of days can be a shock. What's keeping companies from Velotyping could therefore be compared to the anxiety many of them experienced when first faced with word processors.

Which is not to say that Velotype is doomed to oblivion. More and more training institutes are offering Velotype courses, and more and more businesses are sending their typists to them. After they have become accomplished Velotypists, they can relieve so much of the office workload that their colleagues can learn to Velotype too — a strategy increasingly adopted in larger companies and government departments where groups of typists work on the same dedicated word processor.<<



H A Y N E S

# HOW TO DO THE HOW-TO BOOKS



In 1954, 17-year-old John Haynes started to build his own Austin Seven Special. One year later, he turned the mechanical knowledge this gave him into cash. He compiled what he had learned into a 48-page mimeographed booklet and within ten days the copies he had printed were sold out. This modest enterprise marks the illustrious birth of the Haynes Publishing Group, unquestionably the world's largest publisher of car and motorcycle

**T**he produce 70,000 books a week," says Peter Ward, Haynes's editorial director, with barely disguised pride. "More than 55,000 of these belong to our own famous Owner's Workshop Manuals. The rest consist of various publications, mainly to do with cars too."

No wonder, then, that the publishing giant's headquarters, set in the rustic English tranquility of Sparkford, near Yeovil, Somerset, are dominated by a warehouse containing a good 800,000 books, almost all of whose covers sport the distinguished, eye-catching colors and trusted logo of a Haynes Book.

With predictable regularity, full-size containers leave the Haynes plant to provide motorists in Europe, the United States, indeed, the world over with "not just with information, but information that works."

As well as spacious storage facilities, the Sparkford headquarters are equipped with a modern printing plant, where fewer than 100 employees see to the day-to-day production of manuals which enjoy a unique worldwide reputation.

Together with a small army of designers and typesetters, their duty is to uphold the reputed infallibility of these books, a qualification that can seldom be applied to manufacturer's manuals.

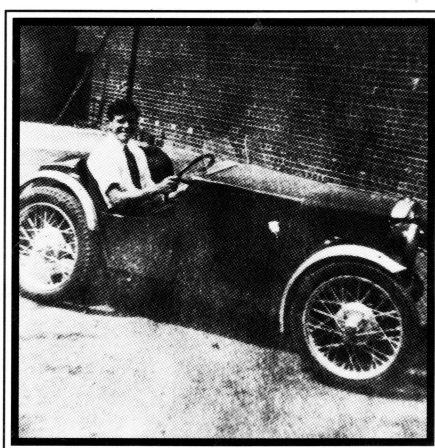
"That quality can be ascribed to our unique operating strategy," says Peter Ward, who was once himself a technical writer. "Since that first Austin Seven, in principle nothing has changed. Our approach is still based on stripping down and rebuilding cars.

"While one of our mechanics does this, the author concerned makes notes, and a photographer is regularly present. As a rule, this part takes from twelve to eighteen days. Then the author gets down to work. He takes a total of about twelve weeks.

And finally it goes to the typesetters, illustrators and the printshop."

In this manner, each year Haynes produces twelve manuals as well as between forty and fifty revised editions. Yet, when one considers the millions of manuals they have manufactured, Haynes has a surprisingly small staff of authors. Just six full-time authors, all with extensive engineering backgrounds, write the books cherished most by countless thousands of car lovers.

Even more surprising is that they work in what Ward himself concedes to be "rather an old-fashioned way." All the current authors still write their manuscripts long-hand, the way it's always been done, and a handful of typists prepare the handwritten text for typesetting. Haynes remains totally unconcerned by this seemingly archaic practice. At Sparkford it is accepted wisdom that journalists type and technicians write. After all, the latter are the experts who determine the quality of



JOHN HAYNES

what goes into the manuals. "All our authors are engineers," says Ward, "who have learnt writing as they've come along."

The type of work in which Haynes has been so successful in the past twenty-odd years makes heavy demands on the expertise of the authors, of course. The selection of new authors, therefore, is not without problems.

Peter Ward says, "You can always expect a large number of applicants. But you can also be sure that half exclude themselves by making spelling mistakes in their letters of application. Those left over have to do a test. For example, we give them an exploded view of a test pump plus a segment of that pump. Then we ask them to write a dismantle procedure. Now, with the right engineering background, that shouldn't be too hard. Nearly all the parts come off in a logical order. So we hope that sorts out the right candidates. And," he laughs, "sometimes it does."



# Eurotra: The Da

A blue ribbon panel is about to evaluate Eurotra, one of the largest machine translation projects in the world. Born of political need, organized according to political exigencies, can it survive only if it's judged by political criteria?

On the 13th of February 1978, the European Community (EC) called a meeting to discuss the consequences of a fundamental Community policy. That policy was called multilingualism, the unqualified right of member politicians and bureaucrats to speak and read their native languages in all community discussions and deliberations. The consequences of that policy were, not surprisingly, the European Paper Mountain and stupendously mammoth translation and interpretation bills.

Representatives of thirty interested European institutions attended. They considered the machine translation system currently in use, Systran, and found it wanting. Based on 1950's technology, Systran had obvious limitations to further development, and besides, it was American. The gathering came to the conclusion that technological dependence was undesirable and that development of a new, wholly European machine translator was feasible. They formed a working group to draw up a proposal.

Four years later — on another 13th, 13 November 1982, a Friday — that proposal found its way into an official Council decision. And thus Eurotra was born, the largest machine translation development program ever undertaken.

Now, five years, and 35 million ECUs (US\$ 40 million) later, the project is over-budget and behind schedule. A blue ribbon evaluation committee has been formed to find out what Eurotra has, and hasn't, accomplished. For Language Technology readers, a preview of what it will discover.

Leave the antiseptic sterility of the airport and ride in the silent gray cocoon of a new Ford Scorpio taxi, down the emptiness of a forested highway. Signs of human habitation are scarce, you could

be  
tra-  
velling  
across an-  
other planet.  
This is Luxem-  
bourg?

Then in the middle of nowhere sprawls a clutter of buildings, all smoked glass and the bronzed anodized aluminum they use on McDonalds. Office locations have numbers in the thousands. Constantly churning escalators carry swarms of scuttling Eurocrats between floors. The building whooshes and clatters like a mechanical hive. Welcome to the European Commission, headquarters of Eurotra. Surrender your passports all ye who enter here.

**The first thing the evaluators will discover is that Eurotra does indeed fulfill a real need.**

"As a direct result of multilingualism," Sergei Perschke, head of Eurotra, replies with the wary expression and wry smile of a good-natured goalie confronting still another penalty kick, "the EC now runs the largest interpretation and translation service in the world. Even larger than the UN — because the UN only has a limited number of official languages.

"There are nine official EC languages, which makes for 72 language pairs. The translation burden has become so heavy that far from providing full service, certain sectors are only translating five percent of what's required. The internal market, for example. A very important sector — you might say the *raison d'être* of the EC itself."

Sergei Perschke shakes his head, then continues in his precise, Russian-accented English. "Politicians don't realize what their decisions entail. Take, for example, the recent Council regulations on chemical products following the recent Swiss pollution of the Rhine. 167 names of chemical compounds were affected. They're still struggling to trans-

late  
them.

So, of course, publication in the official journal is being delayed — and, of course, enforcement.

"Obviously, one cannot hope to fill all the gaps. The needs are growing exponentially. One third of the operating costs of the commission — buildings, heating, salaries — is due to multilingualism. That's almost three quarters of a billion ECUs (US\$ 850 million).

"You cannot keep increasing translation services indefinitely. Even if you could find the money, the highly qualified people are hard to find. And even if they could be found, it's ultimately a question of proportion. Translation demand could be infinite. The entire population of Europe could end up translating."

**The next thing the evaluators will discover is that Eurotra is behind schedule.**

In setting up Eurotra, the Council decision imposed the mirror image of multilingualism on the project's organization: it mandated that each EC member state establish and partially fund its own research group. To that end, the Council approved a five-and-a-half year, three



# 4 of Reckoning

functioning analysis, synthesis, and transfer between French, German and Danish. Depending on which eyewitness is queried, it took the system from twenty minutes to two hours to translate a single, passive sentence. Numbingly slow for a system that's ultimately supposed to crunch hundreds of millions of words a year.

Eurotrans dismisses the slowness of this first test as virtually meaningless.

"It's true the software isn't efficient," admits Charlotte Toubro, of the Danish group. "But at this stage, that's not important. Fast software isn't necessary until the linguistic software is developed. Otherwise, if changes turned out to be necessary, it would be too expensive to change."

"Redesign of the software," notes Stefan Krauwer, a member of Eurotra's central technical coordinating committee, "is already going on, on the basis of a modified theoretical framework. It's already running quicker. If the first system took two minutes, the new system takes two seconds. Redesign is going to make efficient software."

Not everyone is so sure. "Reprogramming won't make that much difference," one observer close to the project commented. "The design is just inherently slow."

**They will also discover that Eurotrans are understandably defensive.**

To the question of what will the evaluators discover, Eurotrans inevitably reply circuitously by stating that the project should not be judged on the simple criteria of how far along it is in creating a machine translator.

"Eurotra is not the best possible approach," Sergei Perschke admits, "if your only goal is to get a product."

"The first thing evaluators should understand," comments Stefan Krauwer, "is that we were presented with two almost incompatible goals: one, to build a prototype translation system; and two, to develop machine translation knowhow and an infrastructure of relationships between research groups in the EC. If the Commission only wanted to build a machine translator, the way to do that would have been to rent a building in one location, place 25 to 30 experts in it, and set them to work for five years."

join  
the Eu-  
ropean  
Community.

At one stroke,  
two more languages  
were added, sending  
total language pairs sky-  
rocketing from the previous  
42 to 72.

According to the original schedule, by the beginning of this year Eurotra was supposed to have completed phase one (preparation and organization) and phase two (basic and applied linguistic research), and have produced a small, 2,000 word working prototype. Phase three was then supposed to expand the dictionary to 20,000 words and develop the prototype, so that it could be handed over 18 months later in mid-1988, to industry or a new program for further development into a product the EC could begin to use on its Paper Mountain.

But as we have seen, the program is already behind schedule.

"The program is now extended," Sergei Perschke says with an almost fatalistic shrug. "When Portugal and Spain joined, we took the opportunity to catch up on the accumulated delay by asking the Council for another year to reach the objectives of the second phase. So now we have until early 1988 to produce the small working prototype with as many languages and language pairs as are realistically feasible. We'll have full coverage for five languages [D, DK, NL, E, F], and partial for the other four."

**They will also discover that the current prototype is slow—very slow**

At the beginning of February of this year, Eurotra ran the first test of an early model of its prototype translator for its coordinating committee. This model had small grammars and dictionaries, and was based on the linguistic rules and code which had been written. It included

phase  
Eurotra  
program  
with EC fund-  
ing of 15 mil-  
lion ECUs (US\$ 17  
million). National  
governments were ex-  
pected to contribute 11 mil-  
lion ECUs (US\$ 12.4 million).

"What we didn't realize until later, sometimes much later," Sergei Perschke says, "was that just because EC member states voted in the European Parliament in Strasbourg for a project, that did not automatically translate into commitment by the national administration back home."

The very nature of the organization, then, insured that delay began to accumulate the day the program began. Thus, while some small and well-organized countries, like Denmark and Ireland, set up Eurotra teams on schedule, most countries took longer. Holland and Italy were the extreme cases. They took almost until the end of 1986 to sign contracts of association, two thirds of the way into the original schedule -- when a small scale, 2000 word prototype was already supposed to be ready.

Portugal has yet to sign. But that's the result of still another political decision—this one unavoidable—which has further delayed the project. In June 1985, Spain and Portugal signed treaties to



"The evaluation should not be a yes/no on Eurotra, but to learn," states Professor Jacques Durand, head of the University of Essex group. "It was the first project in the European Commission of this size. It was highly complicated to set up. And so many factors are beyond control — political questions. The Greeks still don't have a computer. The French group still isn't fully functioning well — because they were forced to buy French equipment. Bull faxes, for example. It slowed them down for a year."

"Given the whole set up of the program," according to Stefan Krauwer, "it could have hardly gone differently since one of the major problems has been the attitude of national governments. But the slowness or stupidity of national governments shouldn't be allowed to block the project."

#### **They will discover that there are a few problems.**

The political problems have been discussed, and are obvious. Ditto for the organizational ones. They are part and parcel of the project, and can't be changed. However, there are other problems as well.

The disappointing results of the first test points up what some in the program have feared, namely that linguistics has been emphasized over computation. The ratio of linguists to computational specialists on the national teams is often

four and five to one. No artificial intelligence experts are involved, even though it's widely acknowledged, even within the project, that a machine translator of

"Perhaps batch was the right decision in the 1970s," another Eurotra researcher commented. "But today I would go for a more modest — and more modern — approach, and allow

for more human interaction with the translation process. It's very reasonable to let humans and computers work together — let each do what he's good at. Unfortunately, the idea for interactive only really became popular in the late 1970's, so the issue was never really discussed.

So what you have is a very safe, unexciting technological model. And the

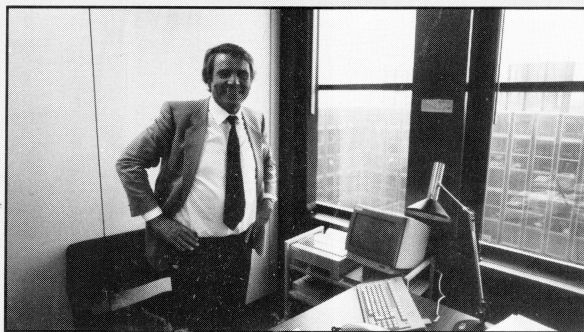
bias within Eurotra is against major changes to improve that model. The linguistic and software design is still in a state of flux, deliberately so — the specifications have not been frozen to allow for improvements to be made. However, the national committees, the groups which actually have to write the linguistic rules based on the specifications of the central technical committee, are reluctant to throw away rules written to earlier and perhaps less optimal specifications. They exert a strong pressure for the system to remain the same. By phase three, the system will be even more obsolete than it could have been.

"There's still hope for a rather sophisticated system," Stefan Krauwer of the central technical committee. "But colleague language groups can force us to be more conservative than we want."

Then consider the imperatives of time and the question of obsolescence: the earliest the third stage can create a working prototype with the requisite 20,000 word vocabulary would be 1990, but more likely '91 or '92. Then that prototype would likely be turned over to industry to commercialize into a working product which could actually begin saving the community time and money — a process which should conservatively take another two years.

Which means that the first commercial application will be born obsolete, more than twenty years after the first technical assumptions were made. And it will face competitors, also currently in development, like BSO's Distributed Language Translation (DLT) project, which is based on use of the latest technology, including Artificial Intelligence, interactivity and parallel processors.

Lastly, and perhaps most disturbingly,



**Sergei Perschke:** "What we didn't realize until later was that just because EC member states voted in the European Parliament for a project, that did not automatically translate into commitment by the national administration back home."

the ambition of Eurotra could never work without real world knowledge.

Which raises question about the technological assumptions Eurotra is based on.

"In Eurotra," a researcher stated, "there was no theory as a starting point. We had a project before we had an idea. How could we do that? Because it's very tempting to think that because you have lots of expertise, like with Grenoble and SUSY, you can automatically create a product. That assumption turned out not to be true. In a system of this size, you really need a leading idea, a basis for the project."

For instance, apparently no thought was given when the project was set up to the possibility of using anything but a batch translation system, the way Systan runs. But batch was a technology born in the fifties.

## **Eurotrans defend Eurotra.**

**"O**ne characteristic of university life in Europe is that people are locally oriented," explains Stefan Krauwer, a member of Eurotra's central technical coordinating committee, in his office at the University of Utrecht. "That has practical consequences. Students don't switch Universities because they will lose scholarships, they will not be taken seriously — or they can get drafted. Working with others in foreign universities is not encouraged. Applications for funding to attend conferences have to made a couple of years in

advance. Only a very small amount of money is available for travel. People just don't have international connections in Europe. Eurotra was a very good way to encourage relationships. In this regard, Eurotra has been a unqualified success."

"It's gotten people to actually collaborate," says Jacques Durand of the University of Essex group. "It's quite new in European universities to get people to communicate electronically. A great achievement."

Another benefit has been to encourage a sort of inter-European technology transfer. Now people are more

aware of what it is everybody's doing.

"One aim of the project is to support computational linguistics in Europe," Dr. Jacques Durand, of the University of Essex states, "to create a center in each country."

Charlotte Toubro: "I know that for the Danish group Eurotra has accomplished a lot. We started out here with absolutely no forum for machine translation. Very few people even knew about it. Now we have a whole group with experience working with MT. Even if the Eurotra project stops, MT will continue here in Denmark."



the final Eurotra design might not be able to accomplish the project's original mandate to cut back on the European Paper Mountain – because it will not be able to handle the ambiguity of bureaucratese. According to Lee Humphries of the British language team at the University of Essex, "Since bureaucratese uses every construction in the book, to achieve reliable translations, reasonable restraints would have to be imposed on input text. If a human can't understand it, a computer surely won't."

"That's a shocking admission," a close observer of Eurotra gasped on hearing the news – then smiled wryly. "Of course, it might not be altogether a bad thing, forcing bureaucrats to write clearly."

### What will the evaluators report?

The European Community has a genuine need for multilingual tools. In order to create a unified economic space, fragmentation by language has to be overcome. Plus European industrial competitiveness is at stake – high technology products require lots of documentation. The more complex they are, the greater the importance of documentation.

Is Eurotra likely to provide those tools?

"If the evaluators look at the actual product," Stefan Krauwer says, "and compare it to what it costs, then they might very well say, stop, it's a waste of money. If they compare the organization to a car factory, then they'll say it's a failure. But if they look at other things achieved, then they should say the project was very successful. What's been spent on Eurotra won't pay the daily coffee bills for the translators working in the Community today. If the money has been found to have only gone to building up knowledge in this field, it's been money well spent."

What does Sergei Perschke think the report will be like?

"I hope it will be critical," he answers with his wary gaze and wry smile, "but not unfriendly."

"I think they're pretty naive," a close observer of Eurotra remarked. "If the evaluation committee focuses on the very real translation needs of the community, then they're in trouble. The consequences of a negative report could be major. If the report decides that Eurotra will not be able to produce a product, national groups might walk out."

In the last analysis, however, so much has been invested in Eurotra that about the only way they could vote to kill it is if the evaluators are confronted by something incontrovertibly disastrous – then

they'll have to say no to save their own reputation. More likely, they will opt for another political expedient: either allow Eurotra to go forward at reduced

"At least now when we sit down to design a system," a Eurotran researcher ruefully grins, "we will know what directions not to go in."



**Stefan Krauwer: "What's been spent on Eurotra won't pay the daily coffee bills for the translators working for the Community today."**

funding, or continue funding and recommend a study begin to find a new solution.

And if Eurotra goes? Would that be nine years thrown away?

### P.S. How has multilingualism fared inside Eurotra itself?

Finally, an ironic sidelight to the whole question of multilingualism. When the project was in its formative stages, even though English was the only language all members understood, the working languages were French, English and German.

Then one day the Danes came in and said, "If English is not accepted as the working language of the project, we are going to begin using Danish for all our communication with other members." That was the last time anybody used anything but English.<<

## From Sputnik to Eurotra

### A Short history of MT according to Sergei Perschke

Sergei Perschke, head of Eurotra, describes the development of machine translation, from its origins to the birth of Eurotra:

Machine translation is a product of technology pull. When computers were being popularized at the end of the forties, developers were looking for applications. Translation was an obvious one; Wiener, von Neuman, they all talked about it.

Machine translation is also a product of technology push, as well. In 1958, the Russians put Sputnik into orbit. US secret services accused the government of not devoting enough resources to translating Russian technical documents. The first experiments in MT had begun only in 1956.

One of the first systems produced was at Georgetown University in Washington DC. That system went on to perform service at Oak Ridge National Labs and at the Joint Research Center of the European Committee – Euratom.

Aside from the low level of performance of the computers, this first effort had two drawbacks. One, the sponsoring agencies were general or military intelligence services – who weren't interested in advancing science but in results, and so imposed perhaps unrealistic contractual restrictions. And two, the computational side of MT was em-

phasized instead of linguistics. Computation was new, linguistics old, so the argument went; linguists didn't understand computers.

The problem was, of course, that computer specialists didn't understand linguistics. They had naive simplistic ideas of linguistics, seeing what they were doing as constructing a sort of electronic dictionary.

The result: a system which was computationally clever and linguistically simpleminded. You need good will and imagination to call what came out a "translation." Most successful translations were accidents.

Voices of discontent were raised. Then in 1966, the National Academy of Science published a report, the now infamous Alpac Report. The Alpac stated unequivocally that

1. machine translation is impossible;

2. and besides, machine translation is not needed – there were enough immigrants around in the US at cheap rates, the so-called "kitchen table translators."

So the US government stopped funding MT research. Europeans followed the US lead. Most projects in Europe stopped. Only two survived, Ariane at the University of Grenoble, and SUSY, at the University of Saarbrücken. Underfunded, they remained sub-critical.

When the first prototypes emerged in 1978, they were conceptually obsolete in both linguistic theory and computational technology.

Interest in machine translation grew in the mid-1970s when the European Commission in Luxembourg mandated an action program for the exchange of scientific and technical information. There again the problem of multilingualism reared its head.

Nobody has ever solved the problem of multilinguality. There is no situation anywhere else in the world comparable to what exists in modern Europe. One language could never be imposed, it would cause political disaster. For 110% political reasons, Europeans need translation from all languages into all languages

Machine translation was considered the only way to get around the barrier of multilingualism. A committee evaluated all the alternatives and decided that if the community wanted a quick solution then select an American system, the one based on the Georgetown system, Systran. Even though obsolete, it was adopted short term. A research program was started to come up with a long-term solution. That research program was Eurotra.

From the day machine translation was first discussed to a Council decision in 1982 was ten years.



# If you need to produce and translate vast quantities of consistent documentation, you need company dictionaries.

Each industry has its own language, each company its own dialect. Does everyone in your company use the same vocabulary?

Standardizing terminology with custom dictionaries is the vital first step in producing documentation economically. Because inconsistency — using various terms to refer to the same thing — is confusing, annoying and increases the cost of translation. Or preparing bids. Or supporting your product.

And because custom dictionaries sit at the core of the newly emerging software for automating documentation. Like terminology look-up, and computer-assisted-translation (CAT).

Standard, printed dictionaries are no solution. They are literally obsolete before the ink dries. The only way to compile custom dictionaries is individually, directly from a representative sample of corporate documents.

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INK can build and maintain dictionaries for your company, products or documents. Using proprietary software, INK compiles these dictionaries from source text, in close collaboration with your specialists. INK also offers efficient software tools to enable you to manage and maintain your terminology.

Since its founding in 1981, the INK group has written and translated well over 100 million words to become Europe's largest specialist in documentation for high tech industries. Our clients include most of the large computer companies operating in Europe.

**Because every company should speak at least one language well.  
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# INTERLINGUA TTI

**"Tight project management  
— that usually swings it."**

With ten UK offices, and branches in Barcelona, Hong Kong, New York and Singapore, Interlingua TTI is the world's largest translation company and a household name in the world of translation, interpreting and typesetting. Lucky for this English company that English is the language of world commerce. But luck is only part of the story behind Interlingua TTI's becoming the biggest translation agency in the world.

No doubt we are the largest," says Susan Brunner, Marketing Director of Interlingua TTI and Sales Manager for the UK, "but aren't we still talking small business, translation being originally a cottage industry?"

That's not what last year's turnover suggests. When you see £5.5 million for a company with 150 permanent employees worldwide, 1900 approved freelance translators and an average of 6 million words translated each month, you know that if translation is not yet big business, it's certainly on the way to becoming so. And as if to stress the speed with which business is growing, the interview with Susan Brunner takes place against the background of a wall of noise, caused by builders working on the umpteenth extension to the Interlingua TTI's offices.

When TTI (Tecnical Translation International) and Interlingua merged in 1985, two very successful translation companies became the world's largest. On the basis of a common philosophy, the merger has proven equally successful.

"First things first," says Susan Brunner, "and that means that the quality of our work is the main priority. One of the most important elements in ensuring such quality is, of course, the caliber of the translators. Our standards are de-

manding. We're not just looking for translators, but for specialists in their fields. People with at least five years' experience translating, or experience in the field itself — preferably both."

## **Specialists for computer text**

The rise of computer industry-related translation has highlighted the demands made on a modern translation company.

Susan Brunner: "It goes without saying that you need specialized people in this field. In addition to translating — in the case of software — you are often actually changing the product. That asks more of the translator's expertise. In addition, it demands a good relationship with the client, given that alterations make continual consultation necessary."

To maintain the requisite confidentiality, a good relationship is also vital. Translators are often the first outsiders to see certain documents. One of the practices which Interlingua TTI employs to meet this challenge is to detach groups of translators for periods on location with the client.

To take advantage of the growing market for computer-related translations, each with its own special requirements and areas of expertise, a separate division has been created at Interlingua TTI. As its name implies, LinguaSoft is exclusively involved in "the translation, conversion and culturization of software."

## **New division.**

Within a short time, this relatively independent division has expanded into a company of its own, with thirty regular employees. Turnover last year amounted to £1.5 million. Such well-known

names as IBM, Unisys, ICL and Micropro are among LinguaSoft's clients.

Here, a network of word processors, laser printers and on-line connections with modern typesetting machinery make up the daily scene. "Not only do an increasing number of clients want their documents created on a specific system and in certain formats, there is also a growing demand for complete production, from start to finish," says Susan Brunner. Interlingua TTI meets this demand with a production process that includes typesetting and desktop publishing.

Apparently finding qualified translators in the software fields is much more difficult than finding them in other fields. To insure quality control, LinguaSoft has increasingly been employing trainees, who first spend a period of time learning their job under the supervision of a senior translator.

## **Managing to stay on top.**

Here too, the most distinctive phenomenon in translation today comes into focus once again: the accent on management. "In many cases, it takes quite a while before we reach an agreement with a client. Firstly, one of our managers, working with a senior translator, must evaluate the project. If we decide to take it on, we then put together a glossary and client dictionary — time permitting. At that point, the work of the translator begins. But it is not only the quality of the work that matters.

It is the tight project management that we can offer that usually swings it," says Susan Brunner.

It's one thing to be the biggest; it's quite another to stay that way. For Interlingua TTI, that means being constantly conscious of technological developments, especially in the field of computer-aided translation.

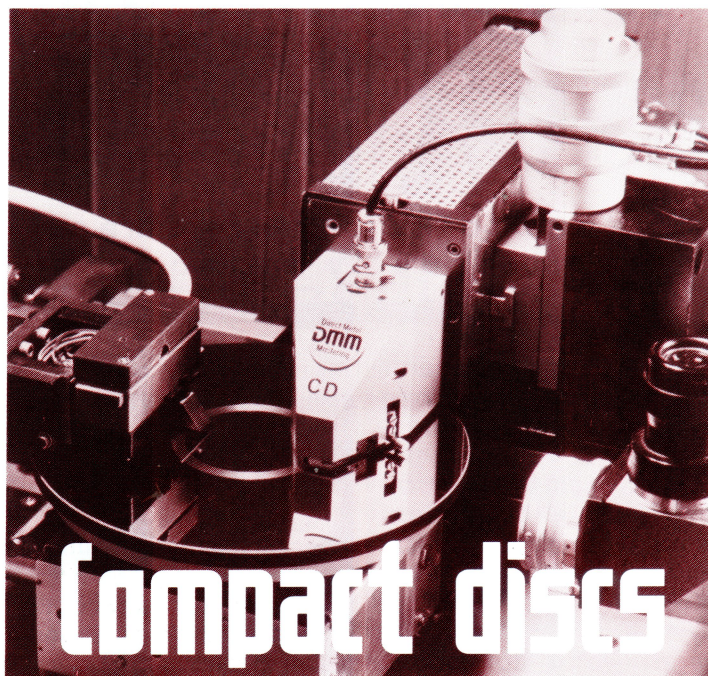
"We have, of course, tested a number of systems for usability," says Brunner, "and the developments are certainly interesting. But up to now we still haven't seen anything that could improve our quality or productivity. We have a good basis to start from. The translation business will hopefully become more mature, with people recognizing it for what it is: serious business for which there is a very definite need."<<<





## ElectroLatest

Newest executive status symbol: the Compaq 3, notable for its Mercedes-like quality, slimmer profile, lighter weight, bright red plasma screen and 12 megahertz clock speed. US\$ 4000, \$5000 for a 20 MB harddisk, and \$5800 for 40 MB . . . With one megabyte dynamic random access memory chips already in mass production and samples of 4 megabyte DRAMS on their way next year, Nippon Telegraph and Telephone has gone one generation further and produced the world's first 16M DRAM . . . Intel has released the compilers it uses for its own inhouse development. Specially built for their own 8086, 80286 and 80386 processors, these Intel compilers speed up code writing in C and Pascal . . . Atari takes aim at the desktop publishing market with a new package that includes a computer, laser and software for \$3,000, less than the cost of an Apple Laserwriter alone . . . Signs that CD-ROM hardware will get more affordable: Philips and Control Data launch a joint venture to market CD-ROM drives on the leading edge of technology and price. New drives are half height, have a capacity of 600 megabytes (11 percent more than most competitors) and a cartridge frame that supports the disk in or out of the drive, thus protecting the disk and allowing vertical mounting. The new venture is called Laser Magnetic Storage International, and OEM prices are expected to be well under US\$ 500 . . . Intel's 82786 high speed graphics chip finds its first commercial application in the new Quad HGA board. Resolution on the NEC Multisync is 640 by 480 with 256 colors. Cost: US\$ 1095 . . . New Thomson Multiscan has resolution of 800 by 560 and sells for US\$ 895 . . . More big screens: Sigma Designs introduce Laser-view Display Screen, a package with high resolution adapter board and a 15 or 19 inch monochrome monitor with an impressive 1,664 X 1200 lines, allowing two page spreads for page maker-up programs. Four shades of gray make perceived resolution close to 300 dpi. US\$ 2395 for the 19 inch, \$1895 for the 15 inch . . . One of the first parallel processing computers using the Inmos transputer is on the market from Parsytec in Germany. 40 mips for DM 100,000. Potential applications include language processing requiring AI.



## HIGH TECH THE GOOD OL' WAY

**O**ne of the things that restricts the selection of compact disks (and by extension CD-ROMS, since the same technology is used to make them) and keeps the price high is the difficulty in mastering them.

Currently, CD's are mastered in a semiconductor-style cleanroom with a laser exposing a light sensitive coating on glass. The coating is then developed and chemically etched, leaving behind a surface covered with micron-size pits. Not surprisingly, this process can be expensive, and can be as much as 20% of the cost of

manufacturing a disk.

Now Teldec, the large West German record company, has developed a mechanical system to replace the photo-electrical one. A diamond-tipped stylus driven by a piezo electric element vibrates pits into a thin copper layer evaporated onto a glass disk. "Direct Metal Mastering" requires no cleanroom — dust particles are simply mashed into the copper by the needle. Although machines cost US\$ 500,000, Teldec claims that mastering costs can be reduced to a third of what they were under the old system.





# NewSpeak

According to **Mark Stefik** at Xerox's PARC in Palo Alto, Artificial Intelligence is now in the process of becoming the latest vehicle for the development and proliferation of a new form of "knowledge media." Knowledge media, according to Stefik, embrace not only the representation and storage of knowledge but also its transmission throughout society. As AI technology matures, Stefik argues that it will increasingly take on this role as a carrier and transmitter, since the knowledge in an AI system is dynamic and can be executed for solving problems in a more flexible way than is possible with any other knowledge medium.

*From AI Expert Systems magazine.*



**John Scully**, president of Apple: "In the 1970s, data processing was the central purpose of computers. This was a time of large mainframes locked away in high-security temperature-controlled rooms. Today the giants in the computer industry are scrambling to redefine their product lines in a distributed processing model. I predict the epicenter will shift again as we discover that what we really need to do is not just connect networks to computers, but connect information to people. For people to be productive on a connected network, information must arrive in a recognizable and useful form. I believe that by 1990, the epicenter will shift from distributed processing to document processing. As the critical mass of stand-alone and connected workgroups grows, so will the market opportunity for new graphics-based software and peripherals for document preparation. As workgroups have the ability to access information regardless of where it is on the network, documents will take on an increasingly important value based on their timeliness and on the inclusion of real-time information. As artificial intelligence becomes increasingly important, document pro-

cessing will lead to increasingly intelligent documents. Document processing, however, is not limited to the printed page. It embraces the transference of valuable, customized, and analyzed information into enhanced graphics, text and layout for clear communications. In fact, some documents may never be printed out, but only read on a display."



"Seagate President **Tom Mitchell** almost never reads. 'He's the fastest numbers man but the slowest reader I've ever seen,' says a vice president at Seagate. Mitchell doesn't know if he has a reading disability but says he had read only two books in his file: "One was

creasingly has to do with information. Not too long ago, the manufacture of things like textiles and steel and automobiles were the driving structures out of which industrialism emerged. The winners in that game profited from mass production, economics of sale and low-cost resources. Now, the value added transforming material is related to our capacity to understand and use information in various ways. The principal technologies involved are telecommunications and computing. And the two great systems that will use them predominantly are finance and recorded entertainment.

"These two industries are establishing the rules of the game. Like we saw in the late sixties when oil became the dominant medium of international transfer of energy, and oil set the international energy price. Today the game is computers and telecommunications, and the rules will be structured around finance and entertainment, the two dominant players. Other people who want to play this game will have to follow the rules by the two dominant players

Jay Ogilvy: "What gets me is how utterly inappropriate our basic economic categories are. Look at the difference between how you price a ton of steel and how you price information. For one thing, we need to recast the concept of property, because in Marx's terms property is by definition inalienably set. I sell you the cow. You got the cow. I don't have the cow any more. I sell you information. You got the information. I still have the information. That's one anomaly. A second anomaly is the notion of depreciation, the very notion of inventory. Intrinsic in information is the 'difference that makes the difference' to a receiver. So the condition of the receiver is an important part of whether a given signal is or is not information. Is it news or isn't it news? That depends on the receiver and the receiver's ability to understand it. That's not true of a ton of steel."<<



## Biochips in use in five years

Primitive hybrid computers made from silicon and biochips are under development, reports Byte, and practical systems should be available within the next five years. The first prototype hybrids will use analog and digital logic to differentiate colors and feed that information into a computing device so that the system actually simulates the human eye.

At the heart of such a system, according to Richard Taylor, manager of Arthur D. Little's Applied Biotechnology Laboratory (Boston), are light-activated molecules that control the electron flow through the silicon chip. "The integration of the silicon and the organic biochips has already taken place," Taylor explained, "and the best features of the silicon and organic materials are being utilized." Taylor went on to say that the necessary biological molecules have been identified and have been put on silicon using methodologies such as molecular lithography and special thin-film technology for laying down reproducible protein patterns.

Practical applications are predicted for memory intensive systems such as 3-D graphics displays, image processing and storage, robotics and AI.

## Nobel prizes bad for economy?

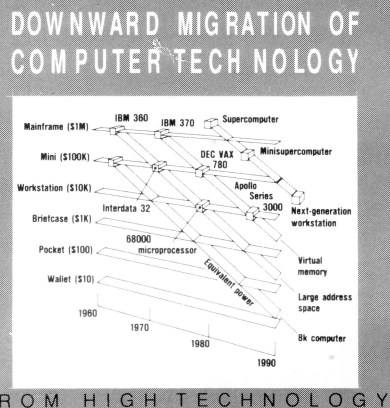
In a recent study of Nobel prize winners of the past 40 years, Christopher Hill of the US Library of Congress discovered that nations which produce the lowest number of prizes per capita have better economic performance.

The German economy strengthened as its share of prizes diminished. Britain, on the other hand, has collected the second largest number of prizes while its economy has steadily declined.

The US has garnered the most prizes — 60 percent of science prizes in the past decade. Yet, suggests Hill, the emphasis in the US "on the performance of frontier science by a scientific elite, rather than on the broad distribution of scientific and technical skills to all workers and citizens, may explain some of the [US's] current economic difficulties."

## Heads up dashboards

Stealing a page from jet fighter technology, workers at the Batelle laboratories in Ohio have patented a system that "suspends" a car's dashboard display in mid-air about 3 meters in front of the windshield, according to New Scientist. Drivers no longer have to shift focus between the road and dashboard. Developed for Ford, the system includes a visual display unit pointing at the dashboard and a holographic mirror which reflects information back to the driver's eye, fooling it into thinking the image is somewhere in front of the car. Batelle believes the system is safer than normal displays because it avoids tiredness caused by continual refocusing.



1984. The other was about a submarine under the polar ice." To fill up some new bookshelves in his house, he recently drove his Maserati to a Salvation Army store and bought every book in the place."

*About Seagate [Harddisk Drives] President Tom Mitchell as reported in Fortune magazine*



The following is part of a dialogue **Peter Schwartz**, formerly head of Business Environment of the Strategic Planning Department at Royal Dutch Shell Group in London, and **Jay Ogilvy**, Director of Research at SRI International, where he worked on formulating the VALS marketing research tool. Stewart Brand moderated, and the dialogue appeared in Whole Earth Quarterly.

Peter Schwartz: "Our technology has progressed to a point where the driving force of our wealth, that is our wealth-creation process, in



# Mercury / Termex

## Dictionary look-up for translators

**T**ermex (called Mercury in the US) is a RAM-resident software package that runs on any MS DOS based personal computer. It enables a translator or writer to compile glossaries for translation or general reference. The building of glossaries or data files can be done as a separate job or while working on a document with a word processor. Termex data files can be consulted during word processing (WordPerfect, MultiMate, VolksWriter 3, XYWrite III, Word Wand, Palantir 3, WorldWriter, and others). The bottom half of the screen is used to display the entry that was looked up, and the required information in the target area of the entry can be moved ("pasted") into the word processing document.

### Installation and startup

The package shipped to us confronted us

with some confusion as to whether the software was copy-protected or not. According to the manual, it was not copy-protected. The program could be easily installed and run without problems — until you tried to access one of the sample glossaries supplied with the package. This resulted in an error message.

Going over the documentation, it became clear that the small box supplied with the European package was, in fact, a copy protection unit (called "HardRoxx") that had to be installed before you could work with the program. Unfortunately, no instructions were included on how to install this nasty little device. By consulting the European distributors, InfoARBED in Luxembourg, we discovered that HardRoxx had to be installed between the parallel printer port and the printer cable, and that the printer at the end of the cable had to be

switched on. Once we did this, the program functioned normally. Future shipments of the product will hopefully contain full instructions on how to install HardRoxx — or better yet, do away with it altogether.

### Building glossaries

Termex works best in a translation environment. The translator can build a glossary in two ways: either by starting a translation straightaway, then adding useful terminological information as he or she proceeds; or by creating the glossary before starting the actual translation. There is a separate utility, GBUILD, to set up glossaries from scratch.

The entry procedure is as follows: The first line always contains the primary key field, for instance a source term. Maximum length of this field is 50 characters. All following lines (with a limit of 900 characters) will then contain target terms, and optionally any information a translator might want to add to this entry — an explanation, context information, translation into several languages, etc.

Each information element in the target area has to be preceded by a field identifier. In translation glossaries, you would use numbers, e.g. {1}, {1a}, {2} for the actual target terms, and abbreviations like {def}, {ctxt}, {subj} for other information. Any string following a field identifier can be used for pasting into a document during translation or writing.

A rather annoying weakness in the program is that you cannot copy an entry, or create a template for one particular entry format. For example, when you are building a general data file for bibliographic data, you might create an entry format as follows:

```
*.author
{title}
{publ}
{place}
{year}
{vols}
{isbn}
{languages}
{subject}
```

For each new entry you add, these field names have to be typed in.



B R O T H E R M E L B Y

**I**f you asked Al-an Melby what he was, what he actually did in his life, he'd probably tell you it depended on the time of the day.

In the morning, you'd find he was a professor at Brigham Young University, teaching at the mecca of computational linguistics in the United States. In the middle of the

day, he might be consulting, as he did for BSO when he on elsewhere in this issue) through its first test. In the late afternoon, he'd be software developer and co-owner of LinguaTech, the company that markets Mercury/Termex.

At dinner time, he'd be devoted husband and father to six children. After dinner, he'd be a scoutmaster, showing his scouts how to signal with flags — they are spelling out L-T in our hon-

or. In between, he'd be sitting on the Computers and Translation Committee of the American Translation Association or writing one of his many articles, perhaps a follow-up to his seminal paper on the translator work station.

His scouts call him Brother Melby. He has a good laugh, the kind that lets you know he's enjoying the hell out of life. Being a good Mormon, he wouldn't put it exactly that way.



### Cross references and look-up

While building a glossary or data file, you can give an entry a cross reference field. For example, the acronym "RAM" can be given a direct cross reference to the full entry "random access memory." When looking up "RAM," you can "chain" to the full entry using a function key, or access the full entry automatically. The chaining option can be set to automatic or manual.

The look-up function is activated by pressing Alt-L. If no glossaries are open, you are prompted to enter a glossary name. There is no facility to display a list of available glossaries. To look up a term, you can enter the full term, or just the first few characters. If found, the term appears on the screen with the target information. Pasting a target field into the current word processing document is a matter of entering the field name and pressing Return, after which the look-up screen disappears again. The required target information is now in the paste buffer, and can be retrieved by pressing Alt-P. The paste buffer can contain only one field at a time.

Finding an entry by searching for a target field is not really possible with Termex. It can only be made possible by manually entering all important target terms separately as primary key fields, with a chainable cross reference to the corresponding source term. Future releases are planned to include reverse look-up as a standard automatic feature.

### Editing and updating entries; conversion

Updating a Termex entry is rather cumbersome because the available cursor control functions are far too limited. Moving the cursor by word, to end or beginning of line, delete word, delete line, insert hard return to create a blank line are all basic cursor operations that are not available.

A separate Termex program, GCONVERT, can convert data files from the standard access format to ASCII format (called "exchange" format), or to "background" format. Files in ASCII format can also be converted back to access format. A data file in ASCII format can usually be read into a word processor, edited, printed etc.

GCONVERT also allows you to select entries on one particular field to create a subset of entries that all have that field in common. For instance, if you are using subject labels in a translation glossary, you could select all entries where the field {subj} is "telecommunications," or "legal" etc.

Once a file has been converted to

background format, it is protected against updating and cannot be converted back to access format. The idea is to have more general, definitive and non-updatable glossaries opened in the background, with a working glossary opened in the foreground, can be updated and modified. However, during look-up, with two glossaries opened, you can still consult only one glossary, i.e. the one in access format. To consult the background glossary, you must close the access glossary first.

Conversion to background format reduces the size of an access file by about 40%.

### Conclusion

In spite of its limitations, Termex is a program that works. It is well-behaved, does not crash nor does it cause other memory resident programs to crash. A major objection is the HardRoxx copy protection device, it makes it impossible to use the program without having a printer connected to the computer you are working on.

The manual does not say anything about managing larger glossaries or data files of 20,000 entries and more. These files will take up several Megabytes of disk space and can only be used on a hard disk system. Nothing is said about the possibility of using Termex in a local network.

The release of a number of industry specific glossaries was announced at the end of last year, but there has been no news about them since. Termex is available in Europe for Dfl 795, and in the US (called Mercury) for US\$ 250. Additional glossaries will sell for an extra Dfl 300.00.<<

### Pros

*It works*

### Cons

*Can't copy entry or create entry format template*

*Weak editing functions*

*Only one glossary open at a time*



## ReadySetGo!

We were going to run a full review of Letraset's ReadySetGo! version 3.0 (written by Manhattan Graphics), but we ran out of space.

So instead, a thumbnail: it has all the normal desktop publishing features, plus three real winners:

One, a word processor with search and replace to edit documents after they've been laid out; a pipeline tool, to connect text boxes in different columns or even different pages; and the ability to reform around graphics, allowing you to draw a circle in the middle of a page and have the text automatically flow around it—then move that circle up and to the right, and have the text immediately reflowed.

Shortcoming: no half-points of lead.

Worst problem: don't make the mistake of clicking the pipeline tool over text that's already been pipelined.

Best recommendation: you're holding it in your hands; this publication was made with it.<<



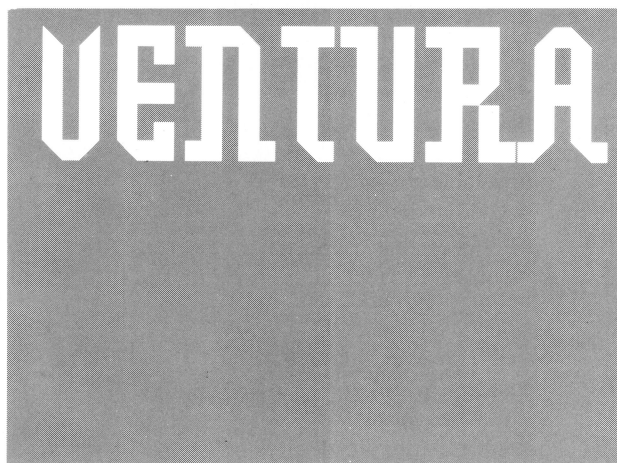
**W**hat we have here is the first desktop publishing program designed to handle industrial strength documentation. Its typography is acceptable, it's a bear to learn, its menus and controls are not intuitive, but if you need to format large documents, and you need to keep making major revisions in those documents right up to shooting negatives for the printer, then this is the page make-up system for you, bar none.

Ventura's great strength is its style sheet approach to document composition. Twenty of them come supplied with the program — letters, newsletters, brochures, reports, books, price lists and tables — or you can easily design your own. The style sheets reduce the formatting of large documents to child's play.

Once you accept, customize or establish your own style sheet specs for heads, subheads, chapter titles, article titles, text, bulleted copy, etc., you turn to the original word-processed document and simply assign a code to the corresponding element in the text (or you write the document with the codes in the text to begin with). If later you want to change the format, style or type, you can do it in one operation on the style sheet rather than on each page, and Ventura reformats the entire document automatically. Ventura can handle articles or chapters up to 150K, and can chain as many as 64 articles together.

A further benefit of style sheets: they can be saved and used in several documents to insure a uniform format across different publications — a feature that's especially useful when several different people are working on the same documents, like in large documentation and translation projects.

Another Ventura strength is the ability to make changes in text right to up and beyond the page composition stage. Because Ventura files have pointers to the text and graphic files created with other programs that it uses, changes made in a Ventura file are automatically inserted in the source files when the Ventura file is saved. And vice versa. Thus all changes in formatting are reflected in both the original- and Ventura-document files. A



## Industrial Strength Desk Top Publisher

third strength of Ventura is that it runs on an XT, the standard business computer, unlike PageMaker which runs on an AT, or ReadySetGo! which runs on the Macintosh. For most companies, no major hardware upgrades will be necessary.

Ventura has some other nice features. It can import files from Microsoft Word, MultiMate, WordPerfect, WordStar, Windows Write, Xerox Writer and any ASCII text files. It can also handle graphics generated by AutoCAD, GEM Draw, Paint and Graph, Symphony, and Lotus 1-2-3, Mentor Graphics CAD, PC Paintbrush, as well as images from Dest, Microtek and Datacopy scanners.

Ventura is easy to install; all you have to do is type VPrep and follow the on-screen instructions. Ventura allows you to control the minimum number of lines in widows and orphans. It can create a table of contents. It can do indexing. It has nice fillips such as decimal leading, dropped capitals and leaded tabs. When you draw an area to contain an imported graphics image, Ventura automatically reforms the text around the graphics block. You can define headers and footers with up to two lines of text.

Ventura automates the flow of text into a page. When you place the beginning of a document on a page, the program automatically flows the text across all the pages the whole document needs. However, pasting up a second article is less automatic. You move page by page, placing the boundaries of each article. Experienced users can take advantage of command key shortcuts instead

of having to resort to the pulldown menus all the time.

And for a program with so many features, Ventura is still astonishingly fast.

Ventura is not, however, the perfect page make-up program. Because the menus and controls are not intuitive, you cannot just sit down with Ventura and begin designing documents. And because the manual is not very good looking or as transparent as it could be, learning Ventura can be time-consuming and frustrating.

Typography is not one of Ventura's strong points.

Not that Ventura's typography is bad — it's just that it will never fool anybody into thinking it came from a typeshop. Kerning is relatively weak, especially noticeable in large sizes (manual kerning is available). The hyphenation routine is not dictionary-based but an algorithym. Algorithms are not necessarily inferior, but this one is. The result is missed opportunities for hyphenation, forcing breakable words down to the next line, and leaving the previous line with extra space. And because justification doesn't letter-space words, but just dumps space between words, lines can be so full of air that they appear to have typographic leprosy.

Some technical points: it runs under a runtime version of GEM, the unsung and probably doomed alternative to Microsoft's Windows operating environment. It needs 640 K of memory. It can run with a CGA monitor and no hard-disk, but neither is recommended — better to use a Hercules or EGA and at least a 10 megabyte harddisk. It can drive Postscript or Hewlett Packard printers.<<

### Pros

*Makes formatting large documents a snap  
Allows major revisions to documents, even after page composition  
Style sheets allow non-designers to produce good-looking output*

### Cons

*Lacks design power and flexibility  
Hard to learn  
Hyphenation weak*



# Wanna Write?

# WriteNow!

**1**ast year, Apple finally stopped bundling MacWrite with the Macintosh, to encourage more third party developers to write word processing software. One of the first to take up the challenge was Steve Job's Next Corporation, which produced WriteNow, being marketed by T/Maker. Compared to its competitors, WriteNow is faster, more WYSIWIG, and easier to use. It's an excellent program for shorter documents and business reports -- every function is so logical, obvious and easy to use that it makes you wonder how the Macintosh ever got along without this program.

The first thing that strikes you about WriteNow is that it's fast, considerably faster than MacWrite or Word. Converting a 3,000 word document from 12 point Geneva to 10 point Times takes 15 seconds; MacWrite takes over a minute. With the Select All function in the Edit menu, documents of up to 50 pages pop into view rapidly, good news for translators and writers. Operations like saving, cutting and pasting, and scrolling are almost instantaneous.

Of course, Write Now has all the standard word processor features. It can put footnotes on the right pages, it lets you soft-hyphenate words, you can specify alternating left and right binding margins. Headers and footers of up to a quarter of a page can be created. The Show Space function displays non-printing characters for spaces, returns, tabs, page breaks and the boundaries of headers and footers.

WriteNow has a number of sophisticated layout possibilities. Its paragraph oriented Ruler, for example, is not in the actual document but in a separate window, hiding behind the text window. Activating the ruler, and thereby automatically selecting the preferred paragraph, is just as easy as copying the ruler. A simple but effective way to ensure consistency in layout over several documents.

With WriteNow, up to four columns can be used, appearing directly alongside each other on the screen. Filling in the desired text is a matter of seconds. Comparing different formats is a piece of cake with the powerful Undo function. Column formats, however, cannot be mixed within the same document.

You can set the spacing between lines at any increment from one to 99 points, and type size itself from 4 to 127 points. There are condense and extend options. And you can change one type font in a document with multiple fonts without changing all the others.

Write Now is the first Macintosh word processor with a spelling checker. At 50,000 words, it's not enormous, and it doesn't parse down to root words, but it does have a nifty little fillip. Like other programs, for each misspelled word found, the checker gives a row of alternatives. But then, not only does clicking the preferred alternative correct the mistake at the cursor, it corrects it throughout the entire document.

The one serious drawback: WriteNow does not import or export text directly from or to MacWrite or Microsoft's Word. Instead, you have to go through a translator, which means leaving your program and activating the Finder. It even lacks a Save As Text Only function. Preparing text for a page layout program, using many of the utility disk accessories, and trading files with IBM PCs are all awkward to perform with a direct Text Save function. Still, the program's elegance and ease of use make the answer to the question when can we expect to see a full-featured, easy-to-use word processor for the Macintosh, Write Now!

## Pros

*easy to use  
fast  
semi-WYSIWYG*

## Cons

*cumbersome import/export of text  
number of columns fixed per document  
available only in English so far*

# LOTUS MANUSCRIPT

A Specialist  
Word  
Processor

**W**ho can blame bestselling novelist Robert Ludlum for losing track of the plot here and there in his heavyweight spy thriller *The Bourne Identity*? After all, when he wrote it, a word processor capable of outlining a document that big was still but a glimmer in Jonathan Sachs' imagination.

Sachs, the co-creator of one of the most successful programs of all time, Lotus 1-2-3, must have been so annoyed by Ludlum's lapses that he decided to preempt them in future. The new word processor he wrote includes three features: a powerful outliner, a way of handling big documents of hundreds of pages, and the ability to include graphics and format text.

Manuscript is Lotus' first entry in the word processor market. It is not, however, a frontal assault on market leaders WordPerfect, Multimate and Microsoft's Word, because it is not a general purpose word processor. Instead, it is a specialist tool for a so-far unexploited market niche: writers working on large documentation projects, or needing to integrate scientific notation and text.

## The Framework

The heart of Manuscript is its outliner. A writer uses a word processor's outline function to plan the structure of document. Each chapter, section, subsection and paragraph is given a title or key name. Together they form the framework of the document. Manuscript's outliner is one of the most powerful around. It numbers and color codes sections automatically in paragraph style, adapts the numbering as new sections are added or removed, and does all this in text mode.

Manuscript should at least capture the hearts of structure freaks. Even without using the outliner, text can be written in blocks which can be split or combined in one operation, though sadly not with one touch of a key. Blocks can be moved especially quickly, because they don't need to be marked off first with sluggish cursors or reluctant mice.

Manuscript is especially adept with

charts and columns. The ease with which they can be created, their contents manipulated and the effortless way they can be formatted afterwards, make even the most popular word-processing programs look like secretaries with two left hands. A disappointment: mathematical operations are impossible to do in the columns – if you want a spreadsheet, you have to go to Lotus 1-2-3.

### Bulk

Apart from good structure, Sachs also wanted to be able to process a lot of text. Manuscript is meant for people like him: professors who don't have to skimp on megabytes, technicians, scientific researchers, market researchers and teams of writers working together on one large project.

Many programs seem to process large documents as slowly if they were hauling trains of coal across continents. Not Manuscript. It handles exceptionally large amounts of text with breathtaking speed. And when we say large, we mean large – each document can be a maximum of 800 pages, one and a half times *The Bourne Identity*.

All this software power, on the other hand, requires a good deal of hardware power, namely the maximum amount of memory DOS can handle, or 640K, a

hard disk, and a fast 8, if not an AT. Anything less and you'll swapping disks and hauling trains of coal across continents again.

### Formatting

Setting margins, tabs, line spaces etc. is simple, maybe even fun if the outliner is used – a stack of pages appears, to be leafed through to layout individual sections.

Style changes such as bold, underline, italics, superscript, font are performed by means of rather cumbersome menus and assigning the well known "v" of approval to the option desired. Manuscript presents a space on the status line to mark the style where the cursor is pointing. Style changes are indicated onscreen by means of underlining – not exactly WYSIWYG.

Formatting a long technical document can be a bear with a standard word processor. Manuscript, on the other hand, lets you define templates that control the first five structural levels in a document. Thus if you want to set every subhead in bold type, instead of having to search for each occurrence as you would with an ordinary word processor, all you have to do is set it once and let Manuscript change all of them for you. Rather like Xerox's Ventura desktop

publishing program.

As for WYSIWYG, Sach's desktop publishing aspirations were apparently an afterthought, since WYSIWYG only occurs in a special preview mode, on a miniature of the page. Text in the previewer is only representational, thus impossible to read. But the page layout is visible and illustrations are just like real pictures. If you want to examine illustrations or mathematical equations more closely, you can glide around the page with a special magnifier window located in the upper right corner of the screen.

### Conclusion

If you need to produce big documents, and you want to integrate text, illustrations and possibly mathematical equations, then Manuscript could be the program you're looking for.<<

### Pros

*Moving blocs a snap  
Can handle huge documents with ease  
Can handle illustrations*

### Cons

*Requires memory and hard-disk  
WYSIWYG weak  
Needs upmarket hardware*



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# Machine Translation

Past, Present and Future  
W. J. Hutchins, 1986

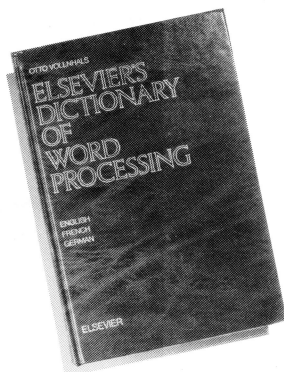
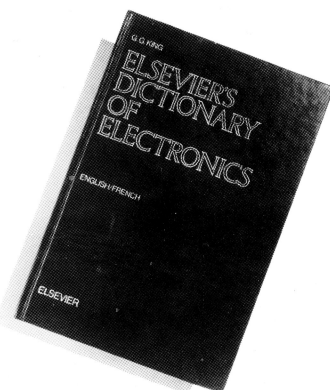
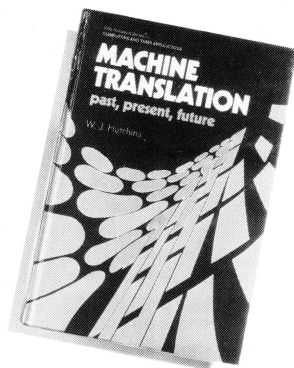
**T**he title itself is as succinct a description as this book could possibly be given. It is a survey of Machine Translation (MT), a term which Hutchins defines as "the general name for any system which uses an electronic computer to transform a text in one language into some kind of text in another natural language."

For me, this unnecessarily restrictive definition betrays the book's only major weakness. Instead of describing actual research into various types of automatic translation, past and present, Hutchins limits himself to the results of this research. Without attempting to shed light on their precise structures and workings, the book outlines a number of Machine Translation systems which have grown out of research projects conducted in both universities and commercial organisations.

This does not mean that Hutchins fails to achieve what he sets out to do. Indeed, he succeeds in identifying the principal problem areas and strategies within MT research. This he is obliged to do if he is to contrast the various projects with one another and present them according to period and approach. He also deals, where necessary, with various other fields of research which have had a significant influence on MT research or in which points of contact can be identified.

Despite his wide knowledge of the MT field, Hutchins seems to have no actual first-hand experience of current research. He works presently at the University of East Anglia as a librarian, for which he was academically trained. This at least gives him the advantage of impartiality. He handles his subject objectively, very rarely favouring any particular approach or project over others. He acquits himself, in fact, as a very well informed layman.

This may be why some of his descriptions of projects look like indiscriminate reproductions of second-hand information, names and terms mentioned. Hutchins is to be complimented on the clarity of his presentation and structure, without which the book would have been unreadable.



## Elsevier's Dictionary of Electronics (English-French)

G.G. King

Elsevier Science Publishers,  
Amsterdam, 1986. Price: \$150.00

This book is not a compilation of previously published electronics dictionaries, but the fruit of a personal collection of index cards, built up by the author over a period of years. Notwithstanding the undeniable originality this lends the book, one might wonder whether it could have gained something from a culling of the standard works, at least for the sake of comprehensiveness.

King has recorded about 30,000 English main entries (consisting of single words, compound words and abbreviations), accompanied by their French equivalents. He claims to cover a total of 150 separate electronics-related fields, ranging from electronic terms used in biomedicine to microelectronics. The only drawback of such a wide scope is that the specialized user will prefer to reach for a more specialized dictionary.

Another disadvantage is the lack of a French page-reference index, normally standard in multilingual dictionaries. As a consequence, one cannot consult a French word without first knowing the English equivalent. This drawback will be remedied, the foreword promises, with the forthcoming launch of the French-English volume.

## Elsevier's Dictionary of Word Processing

(English-French-German)

Otto Vollhals

Elsevier Science Publishers, Amsterdam, 1986.

Price: US\$111.00/Dfl.250.00

In this dictionary, word processing is approached from four angles

-- hardware, software, applications and allied fields (such as graphics, typography, technology, etc.). The only criticism this approach invites is that the field of word processing sometimes seems rather too widely interpreted. On the other hand, this is an admirably comprehensive volume.

The result is 4393 English headwords, 1131 synonyms and 174 abbreviations. For 1300 headwords, short definitions are given where necessary to clarify obscure points, followed by the French and German equivalents. The term 'Word Processing', for example, is defined thus:

The use of computer systems to create, edit, manipulate, store, print, typeset etc. text.

In addition, the French and German terms are listed alphabetically, with page references, in two separate indexes.

An extremely useful reference work for any linguist in the world of automation.

# CALENDAR

## LATE APRIL

**22-24, LONG BEACH, CALIFORNIA, USA**  
AI'87, Artificial Intelligence and Advanced Computer Technology Conference and Exhibition. For information: Jim Hay, Show Manager, Tower Conference Management Co., 331 W. Wesley Street, Wheaton, IL 60187. Tel.: (312) 668-8100.

**23-26, MONTREAL, CANADA**  
Conference on African Linguistics, Department of Linguistics, University of Quebec.

**24-25, ABERDEEN, SCOTLAND**  
Meeting of the Scottish Society of the Institute of Linguists, University of Aberdeen.

**27-29, LONDON, ENGLAND**  
Frost and Sullivan Ltd., three-day seminar on Microcomputer and Personal Computer Strategies in a Corporate Environment, led by Raymond P. Wenig, President of International Management Services, Boston, USA. The seminar is designed for technical support specialists, EDP managers, users and information resource planners. Its aim is to examine the technical, operational and political aspects of microsystems and their successful integration with internal data systems and procedures. For information: Frost and Sullivan Ltd., Sullivan House, 4 Grosvenor Gardens, London SW1W 0DH. Tel.: (01) 730-3438.

## MAY

**1-3, LONDON, ENGLAND**  
First annual conference of the Institute for Translation and Interpreting, Russell Hotel, Russell Square, London. The agenda includes User Aspects of Translation and Interpreting Services, Training for Translation and Interpreting, Language Mediation Activities, Professional Status and Standards, The Translator's Office, How Translators Work, How Interpreters Work, and Business Practice. The Institute's annual general meeting will be held on the Sunday morning. For information: the Secretary, ITI, 26-27 Boswell Street, London WC1N3JZ.

**7-9, ANN ARBOR, MICHIGAN, USA**  
Sixth annual conference on Languages and Communication for World Business and the Professions. On 7 May there will be a pre-conference full-day (\$110) and half-day (\$70) teacher-training workshop covering Techniques and Methodologies for Business Language and Intercultural Instruction. Further information: Department of Foreign Languages, 219 Alexander Building, East Michigan University, Ypsilanti, MI 48197, USA.

**11-13, SAN FRANCISCO, CALIFORNIA, USA**  
CDI (Compact Disk Interactive) Business Strategy Conference and Exhibition. For information: Onliner International, 989 Avenue of the Americas, New York, NY 10018-5485, tel. (212) 279-8890.

**12-14, WINNIPEG, CANADA**  
Canadian Information Processing Society (CIPS) Congress '87. For information: CIPS, Winnipeg Section, P.O. Box 2610, Winnipeg, Manitoba, Canada, R3C 4B3. Tel.: (204) 947-2837.

**13-15, CINCINNATI, OHIO, USA**  
Seventh annual conference on Romance Languages and Literature, University of Cincinnati. For information: Gisèle Lorient-Raymer, Department of Romance Languages and Literatures, University of Cincinnati, Cincinnati, OH 45221-0337, USA.

**15, BOSTON SPA, ENGLAND**  
Aslib Technical Translation Group, visit to the British Library Lending Division, Boston Spa, Yorkshire.

**15, LONDON, ENGLAND**  
Frost and Sullivan Ltd., one-day management briefing on The Revolution in the Telecommunications Technologies, led by Raymond P. Wenig. The briefing is aimed at managers and other professionals responsible for telecommunications, information and data processing. Among other things, it covers ways to reduce telecommunications costs and effectively introduce new techniques. For information: Frost and Sullivan Ltd. (see 27-29 April).

**20-22, LONDON, ENGLAND**  
Frost and Sullivan Ltd., three-day seminar on Artificial Intelligence: Technologies, Strategies and Potential, led by Steven O. Kimbrough, of the University of Pennsylvania. The seminar covers all aspects of AI, from basic concepts, through main areas of application to current developments. For information: Frost and Sullivan Ltd. (see 27-29 April).

**27, PARIS, FRANCE**  
Annual meeting of the Council of the International Federation of Translators (FIT).

**28-29, LONDON, ENGLAND**  
Informatics Resource Centre, intensive two-day workshop on On-Line Computer Documentation, Cumberland Hotel, London. The workshop is designed for systems analysts, programmers, information systems managers, technical writers and anyone concerned with the design of software-user interface. For information: Informatics Resource Centre, 2 The Chapel, Royal Victoria Patriotic Building, Fitzhugh Grove, Trinity Road, London SW18 3SX. Tel.: (01) 871-2546.

**28-30, PARIS, FRANCE**  
Meeting celebrating the 40th anniversary of the French Translators' Association (SFT).

## JUNE

**5-6, PHILADELPHIA, PENNSYLVANIA, USA**  
Dictionary Society of North America, biennial meeting, Philadelphia. For information: J.C. Traupman, St Joseph's College, 5600 City Avenue, Philadelphia, PA 19131, USA.

**5-15, CERISY-LA-SALLE, FRANCE**  
Colloquium on 'Approches de la Cognition, Intelligence Artificielle, Neurosciences'.

**20, EDINBURGH, SCOTLAND**  
Meeting of the Scottish Regional Society of the Institute of Linguists, Edinburgh. For information: Mrs R.E. Robertson, 26 Birch Avenue, Scone, Perth PH2 6LE, Scotland.

# ADDRESSES

**Adobe, Inc.**, 1870 Embarcadero Road, Palo Alto, CA 94303, USA 1/415/852-0271.

**Aldus Corporation**, 411 First Avenue South, Seattle, Washington 98104, USA, 1/206/622-5500.

**Apple Computer**, 20525 Mariani Avenue, Cupertino, California 95014 USA, 1/408/996-1100.

**Automated Language Processing Systems**, 190 West 800 North, Provo Utah 84604 USA, 1/801/375-0090.

**BSO**, Kon. Wilhelminalaan 3 Postbus 8348, 3503 RH Utrecht, The Netherlands, 33/30/911.911.

**Cognitive Systems**, New Haven CN, 1/203/773-0726.

**Digital Equipment Corporation Ltd.**, Worton Grange Industrial Estate, Imperial Way, Reading RG2 OTU, UK 44/734854335.

**Elsevier Science Publishers**, Sara Burgerhartsstraat 25, P.O. Box 211, 1000 AE Amsterdam, The Netherlands, or 521 Vanderbilt Avenue, New York, NY 10017 USA.

**IBM, Research Division**, P.O. Box 218, Yorktown Heights, New York 10598.

**Interlingua/TTI**, Imperial House, 15-19 Kingsway, London WC2B 6UU, UK, 44/1/240.5361

**LinguaTech**, 381 W. 2230 N. #360, Provo Utah 84604 USA 1/801/373-8800.

**Lotus Development Corporation**, 55 Cambridge Parkway, Cambridge, Massachusetts 0214, USA, 1/617/577-8500.

**MicroPro International**, 33 San Pablo Ave., San Rafael, CA 94903, 1/415/499-1200.

**Microsoft Corporation**, 16011 NE 36th Way, Box 97017 Redmond, WA 98073-9717, USA, 1/206/882-8080.

**Orchid Technology**, 47790 Westinghouse Dr., Fremont, CA 94539, USA, 1/415/490-8586.

**Parsytec GmbH**, Jülicher Str. 338, D-5100 Aachen, West Germany, 241/182.2275.

**ReadySetGo! by Letraset**, 40 Eisenhower Drive, Paramus NY 07653 USA, 1/201/845-6100.

**Teldec**, Heußweg 25, 2000 Hamburg 20, West Germany, 40/490.62-0

**Thomson Consumer Products Corporation**, 5731 W. Slauson Avenue, Culver City, CA 90230, USA, 1/213/568-1002.

**Quadram Corp.**, One Quad Way, Norcross GA 30093, USA, 1/404/923-6666.

**Velotype**, Lange Voorhout 14, 2514 ED Den Haag, The Netherlands 3120/70/659912.

**WordPerfect Corporation**, 288 West Center Street, Orem, Utah USA 84057, 1/801/227-4000.

**Write Now by T/Maker**, 1973 Landings Drive, Mt. View, CA 94943 USA, 1/415/962-0195.

**Xerox, Rochester**, NY 14644 USA, 1/716/423-5078.

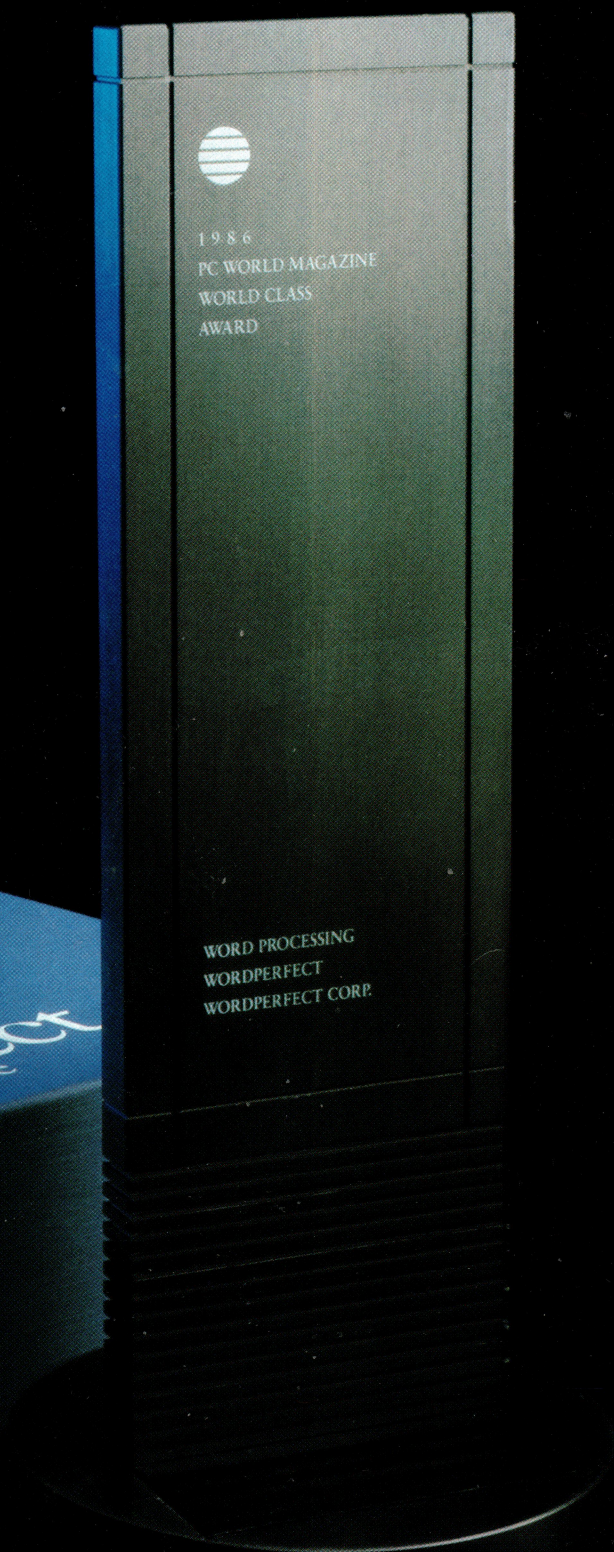


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## European Headquarters

ALP Systems S.A.  
Route de Boudry 14  
CH-2016 Cortaillod/Neuchâtel  
Switzerland  
Telephone: 41.38.44.21.11  
Telex: 952-751 ALPS  
Telefax: 41.38.42.11.85

## U.S.A. Headquarters

ALP Systems, Inc.  
190 West 800 North  
Provo, Utah 84604  
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